Textile World

Rayon Issue

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SECTION I—GENERAL ARTICLES

Domestic Rayon Output Increases About 20%

Total for 1926 Estimated by TEXTILE WORLD at 63,400,000 Lbs.—1927 Production May Reach 80,000,000 Lbs.—This Progress Has Been Made Despite Trials and Tribulations of the Year—Major Development Still to Come

By Douglas G. Woolf

TOO many, the rather troublesome period through which the rayon industry passed last spring prior to the reduction in prices indicated the pricking of a bubble whose explosion has been predicted repeatedly during the last five years. These consistent "bears" however appear once more to have been premature in their condolences. The poor decrepit industry which they were mourning will show merely an increase in output this year of approximately 20% over 1925; while 1927, from present indications, should witness an even greater advance over 1926.

Naturally this statement, in common with all forecasts, must be qualified. It is impossible to predict with certainty the trend of conditions among textile mills which consume rayon and which, in the last analysis, are the deciding factors in regulating its production. However, from the best information obtainable, it is estimated by TEXTILE WORLD that approximately 42,000,000 lbs. of rayon were produced in the United States during the first eight months of this year and that the total for 1926 should amount to more than 63,000,000 lbs. as against an output of approximately 52,000,000 lbs. in 1925.

It is even more difficult to forecast trends for the year 1927 but production programs now projected or in process indicate the manufacture of approximately 80,000,000 lbs. next year. More important still, it seems to be the consensus of opinion among the producers themselves that their capacity production will find a proportionate demand.

The accompanying table indicates TEXTILE WORLD's estimates of domestic rayon production, by companies, for the periods referred to above.

Granting that the estimate of over 63,000,000 lbs. for 1926 is approximately correct, it should be noted that this will represent a shortage of about 7,000,000 lbs. under the figure predicted in these columns at the beginning of the year. For this discrepancy, no apologies are in order. The peculiar conditions affecting the textile industry this year plus the very marked increase in imports of foreign rayon could hardly have been forecast. Looking back over the trying months of May and June, it is a surprise to the writer that the 1926 total promises to be as large as it does. It is also, in his opinion, an indication of the virility and permanence of the rayon industry.

Interpreting the Depression

The most important feature of any review of the rayon situation thus far this year and of any forecast for the remainder of the year and the year to come should be an interpretation of the depression which confronted the trade last spring and which led to a price reduction. Such evaluation can only be relative and must represent personal opinion to a large extent because it is possible to secure many and conflicting views on this matter.

As implied above, there are those who have never been convinced that rayon and other synthetic fibers are destined to occupy an increasingly important position in textile manufacture. To these, the events of last spring presaged the halting of rayon's onward march, if not its retreat.

To others, the dip in the curve was a temporary and relatively unimportant incident in synthetic fiber development. The writer continues to align himself firmly with the latter group. He has stated repeatedly that the progress of this movement would be marked by intermittent peaks and dips as production and demand alternately got ahead of each other. There is absolutely nothing in the present situation which would influence him to change his opinion in the least.

Last spring's so-called crisis represented, of course, one of the dips referred to. In addition it represented the cumulative effect of a number of complicated conditions which are almost too well known to require comment. These included general textile depression, increased imports, dissatisfaction aroused by inferior rayon fabrics, etc.

Then too, it must be realized that

TEXTILE WORLD'S OFFICIAL ESTIMATE OF DOMESTIC RAYON PRODUCTION

In presenting the following estimate of domestic rayon production, by companies, for 1926 and 1927, TEXTILE WORLD wishes to point out the difficulties involved in such forecasting. Development of demand from the textile trades and completion of expansion programs by rayon manufacturers are two of the variables which make these figures approximations rather than assured data.

The table is based on authoritative information secured from the producers themselves, except in the case of two companies whose policy this year did not permit the release of such figures. In these instances, the best estimate, based on our knowledge of the plants concerned, was used.

Last year's totals are given for comparison, while the new data include estimates for the first eight months of this year, for the total year 1926, and for the year 1927.

	Total 1925 Lbs.	1st 8 Mos. 1926 Lbs.	Total 1926 Lbs.	Total 1927 Lbs.
The Viscose Co.	35,000,000	25,000,000	37,000,000	45,000,000
Du Pont Rayon Co.	6,800,000	6,900,000	11,500,000	15,500,000
Tubize Artificial Silk Co. of America	5,200,000	5,000,000	7,000,000	8,000,000
Industrial Rayon Corp.	2,250,000	2,250,000	3,500,000	4,000,000
Amer. Cellulose & Chem. Mfg. Co.	1,500,000	1,500,000	2,500,000	3,500,000
Belamose Corp.	675,000	650,000	1,000,000	1,500,000
Acme Rayon Corp.	325,000	250,000	400,000	500,000
Other Firms	500,000	350,000	500,000	2,500,000
Totals:—	52,250,000	41,900,000	63,400,000	80,500,000

the cut in prices was not only an effect of the loss of confidence but a contributing cause. Long before the reductions was announced, it was known in the trade that it was imminent. The result of such impending action need hardly be explained here. Reticence on the part of buyers to anticipate their requirements in the face of an assured price decline helped materially to intensify a situation already depressed by other contingencies.

If professional rayon "bears" drew solace from last spring's events, they will have many similar opportunities in the future. In addition to intermittent periods when slack must be taken up, there is almost certain to be a gradual reduction in the cost of synthetic fibers to the consumer. How much this will be, no one knows. It depends upon quantity of production, development of new and cheaper raw materials, refinement and alteration of manufacturing processes, etc. Consequently it is fairly certain that there will be periods when the rayon market will lose much of its stability. These will be temporary and will reflect progress rather than retrogression. If the rayon industry could become "pegged" at its present stage of development, with no change in character of product and with the introduction of no new types of fibers, it would be quite possible to establish a stable and permanent price level based on the production of a known number of pounds annually whose consumption is assured by existing demand.

Such stagnation is not on the cards. The financial incentive to further research in synthetic fiber production, plus the natural curiosity of scientists now interested in this field, insures developments which will be epoch-making in character. The writer realizes that he is repeating himself in making this statement, since he has expressed the same thought in previous articles. His excuse however is that, in his opinion, the current year with its attendant uncertainty demands proper emphasis on this broader aspect more than has any other year during the rayon impetus. Unless it can be realized that such factors as poundage produced, quantity imported, prices named, and temper of demand are subordinate phases, the full potentialities of the synthetic fiber movement cannot be grasped.

RAYON IMPORT STATISTICS

The following table shows imports of rayon "yarns, threads and filaments" into the United States, month by month, for 1924, 1925, and the first eight months of 1926:

	1924	*1925*	*1926*
	Lbs.	*Lbs.*	*Lbs.*
January	251,951	205,627	597,103
February	132,717	619,408	643,448
March	87,430	522,139	1,257,034
April	89,444	431,686	721,380
May	96,555	332,737	882,463
June	144,664	308,592	857,912
July	78,050	546,695	739,128
August	119,196	590,357	661,759
September	181,614	622,304	.....
October	170,120	825,223	.....
November	170,238	1,118,679	.....
December	190,008	877,064	.....
Total	1,711,987	7,000,521	*9,540,340

The following figures show imports of rayon waste and yarns made from waste:

	1924	*1925*	*1926*
	Lbs.	*Lbs.*	*Lbs.*
January	317,021	703,987	586,952
February	395,369	581,199	250,474
March	256,269	474,928	481,549
April	264,771	419,627	348,850
May	416,638	403,639	258,985
June	287,871	271,430	205,859
July	251,405	169,128	310,237
August	255,172	320,440	643,965
September	643,005	574,919	.....
October	819,590	610,449	.....
November	697,617	538,718	.....
December	811,811	410,928	.....
Total	5,416,539	5,528,392	*4,630,305

* This is estimated total for 1926, based on assumption that average monthly importation during first eight months will continue to end of year.

Progress of Individual Companies

THE table of production accompanying this article gives the output of the leading commercial factors in the rayon industry. Amplifying these statistics, the following brief facts bring up to date the information regarding expansion programs of the individual companies:

The Viscose Co.—The most important development in this company's progress has been construction work on the new plant at Parkersburg, W. Va. Laid out as a unit with a potential capacity of 10,000,000 lbs. per year, this addition to the company's facilities will be in operation in 1927.

Du Pont Rayon Co.—The expansion of this company's plants at both Buffalo, N. Y. and Old Hickory, Tenn. has been pushed rapidly, as indicated by the fact that its 1926 production should be nearly double that of 1925, and particularly since the probable output for 1927 will be in the neighborhood of 15,000,000 lbs. This company has secured a firm hold on second place among domestic producers, on a quantity basis.

Tubize Artificial Silk Co. of America.—Although rumor has continually linked this company's name with reported expansion at Hopewell, Va., where its plant is located, and with the building of new units in other places, particularly Chattanooga, Tenn., no definite statement has been made by the company nor is it believed that any final decision has been reached. Incidentally rumor has also been insistent that the concern planned to extend its operations into the viscose field, to supplement its nitro-cellulose production, but here too no confirmation is available.

Industrial Rayon Corp.—The expansion program at this company's plant at Cleveland has been virtually completed and the company is operating on a capacity basis. It is understood to be possible that the 1927 output from present facilities can, by increased efficiency, be expanded slightly over 1926. Nothing definite is known regarding plans for the building of further units and it is believed that the company is at present concentrating on the successful operation of the existing plant.

American Cellulose & Chemical Mfg Co.—Steady progress has been made in increasing the output of Celanese from this company's plant and it is understood that the product is finding an increasing demand owing to its distinctive characteristics as a cellulose-acetate silk.

Belamose Corp.—Latest information from this company indicates that installation of new equipment has been completed, giving the plant a potential capacity of 4,800 lbs. per day. A probable production of 1,000,000 lbs. for the year is forecast, with an increase over that quantity in 1927.

Acme Artificial Silk Co.—This company also is making progress with its expansion program, as indicated by its increased production. It is understood that still further enlargement of its facilities is projected for the future.

Lustron Co.—No announcement of any contemplated expansion has been made by this cellulose-acetate company.

Potential Producers

As usual, it is extremely difficult to indicate probable output of firms which are not yet on a commercially productive basis. The uncertainties which always confront those who are directly a rayon manufacturing program make definite statements impossible. However it appears certain that several important additions to the ranks of actual rayon producers will be noted during 1927. Among these will be included the American Bemberg Corp., with plant at Johnson City, Tenn.; the Skenandoa Rayon Corp., Utica, N. Y.; the Napon Rayon Corp., Clifton, N. J.; and the Delaware Rayon Co., Wilmington, Del. It is possible that this list will be expanded by the addition of names of other companies now in process of development.

U. S. AND WORLD RAYON PRODUCTION BY YEARS

	World	*U. S.*
	Lbs.	*Lbs.*
1920	50,000,000	9,000,000
1921	65,000,000	18,000,000
1922	79,738,000	26,000,000
1923	97,000,000	35,500,000
1924	141,164,000	38,750,000
1925	185,000,000	52,200,000
1926	*210,000,000	*63,400,000

*** Estimated.**

Rayon Notes from Britain

(Special to TEXTILE WORLD)

A new company known as Scottish Artificial Silks Ltd. is about to be floated with a capital of £400,000. Very few details are yet available but it is known that the company will undertake all processes from the raw material to the finished product. The spinning of the yarn is to be done in former cotton mill premises at Hyde, near Manchester, and the manufacturing at Kirkcudbright in Scotland. Preparations have been in hand for some time and production is likely to commence fairly soon.

* * *

July exports of rayon and cotton mixture piece goods have set up another record totalling 6,558,632 sq. yds. as against 5,239,179 sq. yds. in June and 4,408,309 sq. yds. in May. In view of the long protracted coal strike, this result is considered to be excellent.

* * *

Prices of rayon yarn imported into this country are very little lower than home-produced and in some cases are actually higher. Good quality 150 denier is selling at from 5/6 to 6/– per lb. while imported similar material is about 5/7.

How Leading Producers View Rayon's Future

S. A. Salvage Expects Full Viscose Co. Output to be Needed—L. A. Yerkes Predicts Continued Noteworthy Increase in Future—B. R. Clarke Sees Normal, Healthy Development Ahead—Dr. A. Mothwurf Emphasizes Need of Quality Factor in Successful Merchandising

IN order to present as many different opinions as possible regarding the outlook for the consumption of rayon in the immediate future and in years to come, TEXTILE WORLD has asked leading producers of this material to present their views briefly in this issue.

There are presented below statements by several prominent manufacturers. It is interesting to note that, while all refer to the uncertainty through which the rayon market passed in common with other branches of the textile industry, they are unanimous in forecasting a steady and healthy growth for the future.

Full Production Will Be Needed

By S. A. Salvage

President, The Viscose Co.

WE believe the condition of the textile trades in general for the first eight months of 1926 left much to be desired, and taking into consideration the contributory factors which the domestic rayon manufacturers have had to contend with—which were more or less foreign to other textile fibres—it has followed that the stand we have taken on the side of quality merchandise is appreciated by both the manufacturing and consuming public, and is shown by an increased demand.

During the early part of this year, the unsettled European conditions brought about dumping of some foreign sub-standard rayon yarns in this market, and some manufacturers of rayon goods not familiar with these yarns were tempted by the low prices to try them, and the distastrous results obtained reacted for a time on all rayon products. We believe this stage has been safely passed, and consumers today are more critical than ever.

This is borne out by the large increase in consumption of domestic products for the past few months, which, in our case, equals the maximum current quantities we are able to produce. For the first eight months of this year, our production was 25,000,000 lbs. and for the year will exceed 37,000,000 lbs. This figure would have been eclipsed if the usual demand for heavy sizes had continued.

We have under construction a plant at Parkersburg, W. Va., the production from which will be available in 1927, and with material delivieries and construction going ahead on this as planned, we should have available for 1927 a total of 45,000,000 lbs., which, we believe from the present trend, will be needed in this market.

Rayon Will Continue to Increase

By L. A. Yerkes

President, Du Pont Rayon Co.

THE rayon industry has been through the last year what, for want of a better word, might be called a hectic period. The total producing capacity of the world has increased tremendously during the last few years and it was inevitable that a time would come when production would equal or exceed the demand. There has been a wild scramble in Europe to turn out the largest possible tonnages of rayon, in most cases irrespective of quality, and with the idea of selling most of it in the largest consuming market in the world, namely the United States.

The increased consumption of rayon in this country year by year for the last ten years has been remarkable, and these figures have been published too often to need repetition. The consumption for 1926 shows a still further normal increase over 1925, and under ordinary circumstances the market would absorb the increased home production as well as the normal increase in imports; but obviously, the American market was not in a position to absorb the increased American production plus the abnormal increase of imports.

It is admitted that the quality of the best American rayon is better than most of the European product. The fact that the European product represented as the same "grade" has been and still is offered at prices under the best quality of American rayon of corresponding "grade" is evidence of this superiority of the best American makes. When price consideration outweighed considerations of quality it is conceivable that there was placed on the market articles of merchandise that met with unfavorable reaction on the part of the public.

The entire textile industry has not had a really good period for several years past. There have been periods when one branch would be good and another bad, and vice versa, but there has not been a single year when all branches were operating to full capacity. The consequence has been that a number of textile industries have grasped at rayon in order to bolster up or help out their other lines. Unfortunately, in many cases this has been done without proper knowledge of rayon, of how it must be handled to give satisfactory results, etc., etc. This in turn has produced articles which have not been up to proper standard.

"Learning to Walk"

After all, it is only a period of what we might term "learning to walk." It is astounding that the rayon industry could have made the strides that it has made in the last ten years (and this has been a steady increase and not a periodical one) with so little difficulty. When one considers the fact that the world consumption of rayon today is greatly in excess of that of natural silk and then compares the difficulties, or if you will, the criticisms of individual fabrics made partly or wholly of rayon, one realizes the infinitesimal quantity of poor fabrics as compared with the total enormous volume of perfectly honest merchandise which is being made and consumed all the time.

The adoption of the word rayon was, in our opinion, a wonderful thing for the industry. The yarn is now standing squarely on its own feet. Manufacturers, jobbers and retailers are getting used to and in many cases are anxious to label articles, which contain rayon, as "rayon." Before the adoption of the name they were usually camouflaged by all kinds of misnomers. This is a tremendous advance.

That the rayon industry is still in its infancy is the consensus of opinion of the best judges. It is obvious that manufacturers must learn how to handle this new yarn. They must learn what they can do with it and what they cannot do with it just as they had to learn this same lesson with all other textiles. Probably the manufacturers using rayon today in the United States are double in number of those using this yarn a year or two ago, and this means that the new ones must go through the experimental period and learn how to use the yarn to the best advantage and to produce results that will be satisfactory.

Fortunately, the large percentage of the textile trade are intelligent and their desire is to put on the market the best possible merchandise. This is also the desire of the rayon manufacturers.

With the yarn itself being constantly improved and with this knowledge and experience being gained every day by the textile trades coupled with the statement that is universally admitted,—"Once a rayon user, always a rayon user," I believe it perfectly obvious that the industry will continue to gain by its past experiences and will continue to notably increase for a great many years to come.

Quality to Be Deciding Factor

By Dr. A. Mothwurf

President, American Bemberg Corp.

THAT inevitable cross-road which one always meets with, whether it be in travel, trade, banking, or whatnot, is being approached imperceptibly but surely in the use of synthetic yarn.

Not many years back, manufacturers readily accepted synthetic yarn either because of a potential market for lower priced merchandise of slightly superior quality, or a desire to produce novelty effects. These pioneer manufacturers had their troubles, and in full measure. Innumerable technical and practical difficulties were encountered. Some of these difficulties were readily overcome, others were not. The more persevering manufacturers persisted; the more conservative stood by and watched; the ultra-conservative scoffed.

Persistence, not alone by manufacturers of the yarn but by the knitters and weavers alike, gradually but surely developed something which quite astonished the textile trade. So rapid had been the growth of our infant industry that it became exceedingly more difficult, as time progressed, to keep in touch with its many applications.

Experiments proved that various classes, sizes and qualities of yarn could be used for certain purposes to greater advantage than other sizes, qualities, etc. Yarns produced under certain processes were found to have particular adaptations for special purposes. Our conservative brothers joined the ranks of those pioneers who showed the way. Already rayon had come to stay, although at that time only in its preliminary stages of development.

The silk trade, which had previously looked askance at the advent of a product considered as a possible trader on the reputation of the natural fibre, realized the special niche into which synthetic yarns fitted in the textile sphere, and graciously accepted the new-comer as a possible blessing to the trade.

It came to pass that synthetic yarns

of all classes found a use in combination with silk, cotton and wool, producing not only new color combinations, but decorative effects never before achieved. Today we have our new found friend in combination with cotton and wool, in knitwear fabrics, prints, piece-dyed goods, ribbons, velvets, broadsilks, tie silks, etc. It has been a friend indeed to many, and a savior to some, the hosiery and underwear trades still claiming leadership in its use.

The days of pioneering are over; difficulties are still met with but they are minor and few. Synthetic yarns have certainly come to stay.

At the Cross-Rroad

Now we are at that cross-road.

Milady, whether she be Judy O'Grady or Madam X, has confidence in synthetic hose, gloves, linings, combination silk and cotton piece goods, underwear, or whatever you wish. She calls for them repeatedly. She has learned to discriminate between good and inferior synthetic fabrics, as she has learned to purchase pure instead of weighted silks, fine instead of inferior cottons, and pure instead of shoddy woolens. Her gentlemen friends, too, are not far behind in such powers of discrimination.

Further education and buying, and a keener sense for the better qualities of merchandise will inevitably lead to a demand for better quality synthetic yarn fabrics. The cross-road has been reached, and we must decide between the use of yarns which will coordinate more nearly with the wants which must be supplied.

In this connection it would be well to state that all yarns are being made immeasurably better than they were even two or three years ago, and improvements are still being achieved.

It would be a fallacy to assume that the finest of synthetic yarns will supplant those less superior. There will always be need for both. Some yarns, however, have inherent properties which place them well in advance of others in the development of finer fabrics.

The special advantages of these improved yarns may be characterized as greater durability, washability and wearability, a more subtle lustre, a finer feel, a scroopiness and life unattainable with some yarns, a ready affinity for dyes, and an ability to absorb perspiration without deterioration.

The sheerest garments are being made by manufacturers using a yarn as fine as real silk, denier for denier, such fineness giving fabrics strength, softness and pliability. Yarns of 40 denier are now being used by manufacturers of glove silk underwear.

Must Turn to Quality Yarns

Having had the advantage of examining fabrics made with such improved yarns, it will be the natural and cultural instinct to select them as quality merchandise, and as such, to expect to pay slightly in advance of prices for regular quality. It is inevitable that the jobber, distributor and manufacturer will sense the quality urge of the consumer and will turn out increased quantities of fabrics made of the finest quality of yarns available. Naturally a slight marking up of such merchandise will raise ructions in the beginning, particularly with the jobber, but the insistence of Milady and her Gentleman Friend, will eventually placate Friend Jobber.

For certain purposes, special fabrics will be developed by distributors and manufacturers in which the finer quality of yarns will be used. Such distributors and manufacturers will find it of great advantage to adopt an independent course in the development of such fabrics.

Quality yarns will ultimately predominate. They have measured up. Their sponsors will find a gracious reception in fields yet untouched.

Rayon to Increase in Natural Way

By B. R. Clarke

President, Industrial Rayon Corp.

THE first eight months of 1926 showed the most radical changes in the rayon industry that have yet appeared.

We entered January of 1926 with a considerable amount of talk and expectation on the part of buyers as to what future prices would bring. All of the textile industries, such as cotton, linen, wool, and silk were passing through, and have passed through, a period of depression. The rayon industry has felt the effects of this condition. The results manifested themselves in a continuation of the "hand-to-mouth" buying which has been quite difficult for a raw producer to contend with.

At the same time, the production of the domestic companies has been well taken and there is not an excessive stock of American yarns in the country today. The lower prices on the rayon product which went into effect on July first, have again opened up new fields into which our product is going in increasing quantities, and we anticipate for the remainder of the year 1926 a continuation of the increasing demand which has shown itself during the past months so that when next January rolls around and we count up, it will show that there has been more yarn produced and more yarn consumed in the United State than in any year heretofore.

It is too early to predict with any certainty for 1927, but barring a national calamity of great magnitude, there is no reason to feel that the demand for rayon will do anything but increase in an entirely natural way.

Italian Rayon Outlook Good, Despite Setbacks

Industry Has Had to Face Many Severe Handicaps but Possibilities Declared Unlimited—Analysis of Production by Individual Companies—Distribution of Product by Markets—Items of Expenditure in Cost Per Pound—Has Catered to Medium Quality Consumers

Special to TEXTILE WORLD

CIRCUMSTANCES have militated against the Italian rayon industry in an unrelenting manner for the last fifteen months. During the early part of 1925 the prospects appeared to be very rosy and every effort was being made to increase the productive capacity of the various plants and to build many new ones. The great blow struck by the imposition of the British customs duties did not apparently daunt this people as the increased demand from United States and the increased sales in China, Japan, India, Spain, etc., almost made up for the loss occasioned in the English market. In the summer when the German price convention developed and the English and American prices were reduced, the matter took on a more serious turn and effort must now be concentrated on the non-producing markets mentioned above and/or on a reduction in costs sufficient to counteract the British and American duties and reduced price levels.

The production of rayon in Italy has increased more rapidly than in any other country with the possible exception of France and Holland. A very careful examination of the causes of the rise in Italian production has yielded the following conclusions:

Reasons for Growth

In raw materials and in chemicals, Italy has no particular pull over any other country at the present time. In wages there is an undoubted advantage over almost every country and especially over the United States and England. This advantage is however often grossly exaggerated in that, taken as a whole, lower wages result in decreased quality and quantity of output. In hours, some further advantage is gained but it is doubtful whether this is so great as is usually supposed. Under a new law, the working day may be extended to nine hours and while this time was often previously worked, it is now permissible for the employer to pay for the ninth hour at ordinary instead of overtime rates.

In electrical power, the advantages gained by the Italian industry are immense, notwithstanding the fact that there is always some chance of interruption in the supply of hydro-electric power available. The rapid growth of the industries of northern Italy has resulted in a demand for electrical power which can scarcely be met. It is not because the supply of water from the Alps is insufficient but on account of the fact that the ice in winter necessitates the erection of huge storage reservoirs for the collection of water for use in the periods when the flow from the Alps is stopped. The building of these reservoirs cannot be completed fast enough and the finance of the matter is also another grave complication, which may show itself more in the future. In the meanwhile all electrical power stations are linked up not only with those drawing power from the Alps but with the Apennine stations which to a smaller extent can draw water in the winter. Despite these precautions it is necessary to consider gravely the advisability of erecting a very large

Probably no national producer of rayon has been the subject of so much discussion as has Italy. That country's rapid rise to a position among the leading quantity producers focused attention upon its development. During the discussion, much has been said regarding the quality of the rayon manufactured in Italy, particularly as it affected competition with the domestic product in Great Britain and the United States. The accompanying article outlines some of the reasons for the impetus given to the industry in Italy and points to continued development in the future. A particularly interesting statement made is one to the effect that Italy has manufactured for the needs of a certain market requiring medium quality material but that her manufacturers are alert to the trend of future demand.

coal generating station at Genoa and plans for this are under consideration now.

In regard to currency, the Italian industry has derived undoubted advantage by the falling exchange but the fear of the drastic results of stabilization which must come sooner or later are sufficient to show that this is merely a temporary advantage. From the latest reports it would appear that the Italian government has at present little thought of stabilization in the fullest meaning of the term and drastic efforts are being made in all directions to redress the adverse national trade balance.

Capital Invested

The total capital invested in the Italian artificial silk industry amounts to 1,675,300,000 lire, no less than 85% of which is divided among the four leading producers Snia, Chatillon, Viscosa and Varedo. The industry has been characterized by many amalgamations, both horizontally and vertically, but little effort has been made to join the great world groups of Glanzstoff, Courtaulds, etc., though the Snia concern is known not to be ill-disposed towards this. The policy of all the large producers has been to obtain control not only of chemical firms but of manufacturing and finishing companies and as a result of this, they comprise highly equipped self-contained units.

Production

At the close of 1925 the estimated daily production of the four largest companies was about 63,000 kilos per day, divided as follows: Snia, 43,000; Chatillon, 9,000; Viscosa, 8,000; Varedo, 3,000. The estimates given for 1926 are necessarily subject to revision as it is obvious that, owing to circumstances being at least temporarily against the industry, they cannot be all attained. It is however expected that the productive capacity of the Snia, Chatillon, Viscosa and Varedo companies will be increased by the following percentages respectively: 23,122, 62 and 300.

In addition the following companies are to be included:

	Est. Yearly Output (Approx.) kilos.
Gerli Industria Rayon	250,000
Manifattura Seta Artificiale	250,000
Industrie Chimiche	250,000
Enka	1,000,000
Bemberg	250,000
Fibre Tessili	250,000

The Soc. Anon Gerli Industria Rayon is financed by real silk interests and the factory at Cusano should be ready in the fall of this year. Manifattura Seta Artificiale is financed by cotton interests and the factory at Casale Monferrato was expected to be working in the spring of this year. S. A. Industrie Chimiche is another company financed by cotton interests and the intention is to utilize the centrifugal spinning system in contrast to the usual Italian parallel spinning. This company intends to manufacture staple fiber in addition to ordinary rayon yarn and it is likely that at a later date, the capital will be increased and that the company will take up the manufacture of chemical products for the artificial silk industry. The Enka and Bemberg companies are subsidiaries of the Dutch viscose and German cuprammonium concerns of the same names. The former has been formed out of two Italian companies, "Cremona" and "Vercellese". S. A. Fibre Tessili has been formed by a number of Biella woolen manufacturers under the chairmanship of Sgr. C. Sella.

Not Earning Dividends

Owing to the large number of new companies and more especially on account of the recent large capital increases made by the established Italian companies, it will be seen that much of the money invested in artificial silk has not yet had an opportunity of expressing itself in dividend earning capacity and in view of the present position of the industry it is quite likely that the dividends previously paid on the paid-up capital will not be maintained in the immediate future when a much larger profit will be required. Briefly it would appear that despite increased production, Italy cannot hope to recoup the losses occasioned by price reductions for at least some time to come.

Markets for Product

We now come to the interesting study of the markets obtained by the Italian manufacturers. In the first place it may be said that exports have for the last four years stood in the following proportions to total production: 69%, 50%, 67%, 57%. Every effort is being made to increase home consumption but at the present time Italy utilizes only about 42% of the amount of artificial silk per head consumed in England and in the case of the United States the proportion is 67%. There is therefore room for increase in Italian home consumption but such matters as a reduced standard of living in comparison with other countries make a rapid increase very difficult to attain. In regard therefore to exports, the changes which have occurred in the last eighteen months are illustrated in the following table which shows the relative positions of the various markets at different periods.

Jan.-April, 1926.

1. China
2. United States
3. India
4. Japan
5. Spain
6. Gt. Britain
7. Germany
8. Argentine
9. Switzerland
10. Austria
11. Belgium
12. France
13. Portugal
14. Brazil
15. Czecho-Slovakia
16. Poland

Totals, 2,189,773 *kilos.*

Whole of 1925.

1. Gt. Britain
2. United States
3. Germany
4. India
5. China
6. Switzerland
7. Austria
8. Spain
9. Argentine
10. France
11. Brazil
12. Portugal
13. Belgium
14. Poland
15. Czecho-Slovakia

Total, 7,259,863 kilos

Jan.-April, 1925.

1. Gt. Britain
2. United States
3. Germany
4. Switzerland
5. Austria
6. France
7. India
8. Spain
9. Argentine
10. China
11. Brazil
12. Poland
13. Japan
14. Portugal
15. Czecho-Slovakia

Total, 2,029,226 kilos

The most remarkable feature of the above table is the steady rise in the relative position of China as an Italian rayon market and there is little doubt that the gain is at the expense of Britain and of Germany.

The drop in the British market is entirely the result of the application of the customs duties in that country on July 1, 1925. In the first four months of 1925, that is to say just prior to the phenomenal dumping which took place in May and June of that year, Italy sent to Britain 484,061 kilos, or approximately the same amount as in the similar period of 1924. In the first four months of 1926 on the other hand the exports to Britain only amounted to 79,831 kilos.

The United States has been a consistently well placed market for Italian goods but the amount exported there decreased from 441,528 kilos in the first four months of 1925 to 289,780 kilos in 1926. On account of the larger exports to such places as India, China, etc., the relative position has however not been changed. India, which in the first four months of 1925 received only 105,541 kilos from Italy, took 285,134 kilos in 1926 and was almost as equally an important a market as United States. Germany dropped from 195,507 kilos in 1925 to 79,351 kilos in 1926. Japan on the other hand increased from 10,190 kilos in the same four months' period to 241,002 kilos and provided along with China, an outstanding example of the influence of the Italian manufacturers in the eastern markets. Unfortunately I have been unable to obtain the details of the exports from Italy to Belgium in the first four months of 1925 but from particulars in my possession it would appear that this market has improved. The outstanding example of improvement in European markets is Spain where competition with Britain is keen. Switzerland, Austria and France have decreased while Poland and Czecho-Slovakia are now taking very little rayon from Italy. In South America, the Argentine market has remained loyal to Italy but Brazil, possibly on account of textile depression, has fallen off.

Value of Exports

The value of the Italian exports has materially diminished during the last two years. In 1924 the total exports were 4,582,786 kilos at a valuation of lire 299,639,510. In 1925 the figures were 7,259,863 kilos and lire 473,440,577. On calculating the average value per kilo it will be seen that the prices received during these two years were very stable. Turning to 1926 however we find that in the first five months of the year 3,725,689 kilos were exported at a valuation of lire 163,000,000. It will be seen therefore that the average value per kilo of rayon exported from Italy fell from 65 lire in 1925 to 44 lire in the first five months of 1926. The recent drop in the exchange accentuates this fall still further.

Cost of Production

The average cost of producing a kilogram of rayon in Italy in 1925 was apparently 24 lire and the proportionate distribution of the various items of expenditure was as follows:

Class of Expenditure	Proportion of Total
Cellulose	12
Chemicals	37
Coal	8.8
Electrical Energy	3.5
Labor	29
Administration, Taxes, etc.	9.7
	100.0

Staple Fibers

In the last few months great interest has been occasioned by the introduction of two or three Italian staple fibers under the name of Sniafil, etc. The future of these products is still speculative and the chief interest appears to lie in the possibilities of future extension of the industry in this direction and not so much in the particular product now on the market which does not appear, on cursory examination, to provide any better material than that supplied by other staple fiber producers.

The difficulties in the way of the Italian rayon industry cannot be minimized but the absurd ideas which have been spread in other countries as to the poor quality of the material produced are in many cases grossly exaggerated as the leading Italian makers cater for all markets from the highest to the lowest. It is true that Italy has manufactured for the needs of a certain market requiring medium quality material but it would be useless to gather the impression that her manufacturers are not as alert to the future demands as those of any country. Given the freedom from labor troubles now enjoyed in Italy and a continuance of the determined effort of the people to make good the war losses to trade, there is no limit to the possibilities of the industry, despite temporary set backs.

Possibilities of So-Called "Staple Fiber"

Successful Utilization Being Made of Product Manufactured Especially for Spinning on Silk, Cotton, Woolen or Other Machinery—Absence of High Artificial Luster Makes It Particularly Adaptable for Fabrics Where Soft Finish Is Desirable—Remarkable Possibilities Predicted

By W. Howard Canning, Manchester, Eng.
(*Prepared Especially for* TEXTILE WORLD)

THERE is no doubt that when humanity set out to realize an age old dream of producing silk artificially it was not visioning a yarn such as we know today under the name of artificial silk but an actual reproduction of the fine thread of the natural silk from the silk worm. Numerous clever chemists and research institutes working on and engaged in the investigation of this product have fought long and well, leaving no stone unturned, in their endeavors to find some new methods of application and production.

Among the results achieved from years of hard work and scientific application, the textile trade has been given a new form of imitation silk known as staple fiber. By staple fiber, I do not mean the waste hanks of artificial silk cut to various lengths but the product that is especially made for spinning on silk, cotton, woolen or other machinery.

That a new departure from the old method of production has been made and that a new future has been opened is an undoubted fact, for in spite of the sharp criticism with which the new material was hailed and the amount of cold water with which certain sections of the textile trade endeavored to submerge it, the manufacture of staple fiber has gone ahead from the minute that the important technical and chemical problems were solved. In fact, it has never ceased to make astoundingly rapid strides, so that in a surprisingly short time, a fiber of world wide importance to the textile trade generally has found a solid ground on which to stand.

Types of Staple Fibre

So far the greatest success has been obtained from the material based on the use of the so-called immature alkali cellulose and viscose. "Vistra" which is of the viscose product and produced by the Vistra Co., Textilgesellschaft m.b.h., Berlin, who were undoubtedly one of the great pioneers in this class of material, enjoys a great popularity, owing to its soft sheen and luster akin to real silk. Its good dyeing properties and its soft silky handle make its utility unlimited.

"Sniafil" which is an Italian production of the Snia Viscosa Co., Turin, has a distinctly woolen appearance but has a soft handle and luster.

There are of course several other staple fibers which are being used in lesser quantities than the two mentoined, although in this country, Courtaulds, Ltd., are supplying a staple fiber called "cut fibro."

In all the different makes used there is of course a difference which lies chiefly in the fineness of the individual filament, and at the present time the Vistra fiber is the finest on the market, being as fine as .75 deniers. Naturally the fineness of the filament accounts for the varying success of the different makes as, if the filament is very fine, it enables a yarn of the softest nature and with a maximum of luster to be spun. The individual filament is therefore responsible for many of the characteristics and properties of the staple fiber. It is on record that filaments vary from as fine as .05 denier to 12 denier.

Staple fiber is used in this country in almost every branch of the textile trade, that is: a. Cotton Spinning; b. Silk Spinning; c. Woolen Spinning.

Cotton Spinning

Stable fiber is used in the cotton spinning section of the industry quite extensively and is treated in the same manner as the natural cotton fiber, being carded, and spun on either ring or mule frame. Some very fine yarns have been produced which are used in the manufacturing trades generally and also in the hosiery trade. The counts being spun are from the coarsest on condenser process to the finest, up to 2/120 cotton counts on the fine Egyptian spinning machinery. This has been and is being done on a commercial basis and I have no doubt that in a short time, finer counts still will be spun. In order to do this however it is necessary to have the finest possible filament and the maximum strength, otherwise the resultant yarn would be useless for either weaving or knitting.

Staple fiber is spun on cotton machinery either 100% or with a mixture of cotton such as 80% staple fiber and 20% cotton or as low as 50/50. When the yarns are above 60's cotton counts, it is generally used in the two-ply either gassed and doubled or plain, the results from the former being very satisfactory indeed. I have seen cloths and materials made from such yarns that have rivalled cloths made from spun silk and it is obvious to those using these yarns that a big future lies in the use of staple fiber in place of spun silk.

Strangely enough, despite the fact that the rayon impetus has manifested itself more intensively in this country than in any other nation, we do not hear as much about the so-called "staple fiber" development here as abroad. The trade is familiar with "artificial wool," "Vistra," etc., but there has not seemed to be the same interest in the general class of supplementary synthetic fibers as in England for instance.

It is still a matter of debate just how important any one or all of the existing staple fibers may be regarded. There is no question at all, however, that this whole development represents an indication of future trends. It is in the molding of the synthetically made textile fiber in different forms and to possess different qualities, that much of the progress of years to come may be expected. Consequently the attached article, prepared by a man who has been in close touch with this development in Great Britain, is of interest to all who are concerned with the rayon development.

Silk Spinning

Staple fiber used in the silk method of spinning yarns is very satisfactory but the price is of course much dearer than those spun on the cotton process. It is however mixed with silk and spun the same as spun silk and gassed and doubled in the ordinary way. In this country, owing to the duties on silk it is possible to reduce the price of yarns where a pure spun silk is not essential. The yarns spun on this process are usable in almost every case where spun silk yarns are generally used and here again a big field is open for exploitation.

Woolen Spinning

Staple fiber is used as wool and is either combed and supplied as combed top or as wool in various lengths to suit customers' requirements. It is then treated in the usual method for dealing with woolen spinning. At the Staple Fiber Exhibition held recently at the *Manchester Guardian* offices there were some fine examples of dress materials made from staple fibers in both 100% and in a mixture of wool and staple fiber.

Competition With Cotton

It has been suggested to me on several occasions that staple fiber will prove a rival to cotton owing to the fact that as greater production is obtained the price will automatically come down and when it is on a low basis it will compete directly with fine cotton and mercerized cottons, but I contend that rather than compete with cotton, it will help the sale of those yarns if used in conjunction with them, for staple fiber has the drawback of not being sufficiently strong by itself and needs some assistance in this direction.

As, however, artificial silk is so popular and the consuming public seems to demand something with a luster, it appears to me that staple fiber will fill the gap that certainly exists at present. The metallic luster of artificial silk is out of place in certain fabrics and the harsh handle is also against it in many cases and with a cloth made from staple fiber these drawbacks are overcome. With the increased production, prices are coming down and the yarns will naturally be cheaper. All this, in my opinion, should be an aid to the cotton industry rather than a set back.

Again, the last few years have shown us that cotton cannot be supplied in indefinite quantities and it is essential that new fields should be explored if the world's supply is to be maintained, and staple fiber with its unlimited source of supply, can again come to the aid of the cotton industry. Its production does not depend upon climatic conditions and it is not subject to the ravages of the boll-weevil as in the case of cotton. The supplies necessary for staple fiber are secured for possibly centuries to come.

Use in England

The English textile trade has done much to develop the use of staple fiber. Lancashire spinners, fully alive to the fact that a large percentage of manufacturers were turning their looms over to the weaving of artificial silk, saw in this new material, a means of recapturing the markets which were fast slipping from them, as it enabled them to spin a yarn superior to that being offered to the public as artificial silk without much additional expense and with little alteration to their existing machinery.

The advantage taken of the opening which presented itself has been fully justified and this was proved by the various fabrics shown at the *Manchester Guardian* Staple Fiber Exhibition * held recently.

No one can say what is the limit of the use of staple fiber but I will state that that limit has not yet been found and I firmly believe that there is a bigger future for staple fiber than there is for the ordinary artificial silk, but like every new thing it will take time and perseverance before we can say that staple fiber has reached its limit and what the possibilities are.

* The exhibition above referred to was briefly described in TEXTILE WORLD, July 3, 1926.

Links in the European Rayon Chain

International Connections of the Various Producers Represent One of the Most Interesting Phases of the Industry in Continental Europe—Glanzstoff Group and Its Many Ramifications—Tubize, Enka, Breda, Comptoir and Emmenbrucke Among Other Important Makers

Special to TEXTILE WORLD

THE European rayon industry, apart from that in Great Britain and in Italy, is to a very large extent centered around the Vereinigte Glanzstoff Fabriken A. G. of Elberfeld, Germany, though what might be termed a second ring is apparently in course of formation around the Comptoir des Textiles Artificiels in France and the Courtauld, Enka and Tubize Companies are other factors of great importance.

In view of the international connections of the various producers, it is preferable to deal with the wide subject of this article under the heads of the companies themselves rather than under the particular countries and the following brief sketch has been drawn up on these lines.

The Glanzstoff Group

The vast amalgamation known as the Vereinigte Glanzstoff Fabriken has its headquarters at Elberfeld in Germany and is very closely connected with the German dye trust known as the I. G. Farben-Industrie. These two firms have recently entered upon an intensified campaign with the object of completing a huge amalgamation of rayon producers extending far beyond the limits of Germany.

The I. G. Farben-Industrie controls the "Agfa" company which is well-known throughout the film and photographic industries of the world and the Glanzstoff and I. G. companies have jointly formed the Aceta Rayon Co. which is building a plant at Berlin-Lichtenberg for the manufacture of acetate silk.

The Glanzstoff company's own factories are at Oberbruch Bez. Aachen where viscose is produced. They also work in close conjunction and are indeed allied with the J. P. Bemberg Co. of Barmen who are large producers of cupro-ammonium silk. Other companies under the sphere of influence and in most cases complete control of the Glanzstoff firm are Bayerische Glanzstoff Fabriken with works at Obernburg on Main for the production of viscose; the Glanzfaeden A. G. with viscose factories at Petersdorf im Reisengeb; the Stapelfaserfabrik Jordan with viscose factories at Sydowsaue near Stettin. The latest development is however the amalgamation of interests with the Koln-Rotweil Group through the I. G. Farbenindustrie. With this connection these important producers of Vistra silk and staple fiber are drawn into the Glanzstoff circle of influence.

International Connections

It will be seen therefore that the Glanzstoff company and its subsidiaries control almost the entire German rayon production but internationally the connections are even more interesting. In the first place the direct subsidiaries in Austria and Czecho-Slovakia give this German firm a dominating position in these two countries. In the case of Britain, there was recently formed the Glanzstoff-Courtauld Co., which is erecting a plant near Cologne which will eventually employ some 4000 workers. Viscose and quite probably acetate silks will be produced. This connection between the largest German and the largest British manufacturers is most important and undoubtedly eliminates any serious competition. Through the Koln-Rottweil connection recently formed, the Glanzstoff company becomes connected with England through another channel as the Koln firm are connected with the explosive firm of Nobels, Itd., in England, which in turn is interested in British Celanese.

Connection with the Belgian industry is certainly indirect but as British Celanese is to some extent interested in the Belgian Tubize Co., the Glanzstoff sphere of influence is extended to that country.

Connection with the United States is now obtained through three or four channels: First, by the formation of the American Bemberg Corp. for the production of cuppraammonium silk; secondly, through the Celanese to the American Cellulose & Chemical Mfg. Co. for acetate silk; third, through the Celanese with the Tubize Co. producers of nitro-cellulose silk; and fourth, through Courtaulds with the Viscose Co. of America. Through Courtaulds and the American Cellulose, some measure of interest is extended to the two companies operating in Canada, viz., Courtaulds and the Canadian Celanese.

Connections with the French industry are now much closer by the latest international amalgamations. Through Courtaulds a measure of indirect interest is obtained in the new Soie Artificielle de Calais whose huge viscose plant is being erected by Courtaulds. The Soie de Calais also works in conjunction with the Soieries de Strassbourg, the large plant for which was only recently opened. Once again the Strassbourg firm is connected with the Skenandoa Rayon Corp. of the United States. Through the Celanese, some connection is set up between the Glanzstoff company and the French Tubize work-

One of the most fascinating phases, commercially, of the rayon situation in Europe is the interlocking of many of the great firms in different countries. International connections between individual concerns have been recognized on this side of the water for some time. The attached article takes up the rayon producers of the Continent by groups and indicates the extent to which they are related.

ing the acetate process at Grand Quevilly near Rouen. Through the Bemberg company close connection, amounting to complete control, is established with the Societe Le Cuprotextile which is erecting a factory at Roanne in the Loire district of France.

With Italy little definite is known as to working agreements; the countries have always been in the keenest competition which shows no signs of falling off. The Bemberg concern is however erecting the first cupra-ammonium plant in Italy and the group is therefore "getting a foot" in there.

Connection with Switzerland is obtained through Courtaulds who are interested in the Emmenbrucke firm known as the Societè de la Viscose Suisse.

While some of the connections mentioned above are rather weak, they suffice to show the "world-wide trust" nature of this great German firm. During 1925 the German company made net profits of 5,960,000 marks on the results of their own sales and paid a dividend of 15%. Since that time the capital has been increased from 30,000,000 marks to 42,000,000 marks by the issue of 40,000 shares of 300 marks each. A considerable proportion of these shares is understood to be placed in the United States. During the last financial period the Bemberg company made a net profit of 1,684,005 marks and paid a dividend of 8%.

Other companies in Germany which are not under the direct control of the Glanzstoff concern are only of minor importance and do not need any further comment in this brief record of the position.

Price Convention

For some considerable time, the German industry has been subjected to very keen competition from Italy. The latter country is favored by exceptionally low wage rates, by very cheap electrical power, by almost complete absence of labor disputes and perhaps above all by a depreciated currency. Since the autumn of 1925 the Italian exporters have been reducing prices rapidly and the German industry met with the greatest difficulty in offsetting this.

Ultimately it was decided to form a price convention, under which customers of the German combine of manufacturers who placed 90% of their business with the combine, were to receive special terms. These concessions take the form of a bonus where takings do not fall below 3,000 kilos. As much as 5% is allowed to those consumers who take annual amounts of not less than 40,000 kilos.

It is anticipated that this arrangement combined with the liking for German goods of high quality will slowly result in a slackening of Italian competition. That the latter country does not intend to take the matter lying down however may be visualized from the fact that the Italian companies have already replied by the establishment of a joint selling organization in Hamburg.

The tariff on artificial silk yarns entering Germany varies from 60 to 220 reichsmarks per kilo, but there are many international agreements which affect this in a number of cases and it would be impossible in the space at our disposal to deal with all of these. The increased home demand for artificial silk in Germany is in no small measure due to the intensive propaganda which has been carried out not only at the great fairs such as Leipzig but in "Silk Weeks" etc.

In the above summary of Glanzstoff connections, mention was made of the Glanzstoff-Courtauld Co., recently formed. The capital of the new concern amounts to two million marks jointly subscribed by the two companies and it is expected that when completed the Cologne plant will be capable of producing from 8 to 10 million pounds of rayon per annum.

Staple Fibers

Germany has for many years taken an active part in the manufacture of staple fiber and the Koln-Rottweil Co. has established an unequalled reputation for "Vistra" staple fiber. The Glanzstoff firm has recently brought out a new yarn which is said to have a particularly warm feel. It appears however that this material is tubular artificial silk as made by La Compagnie Nouvelle des Applications de la Cellulose in France and by Kenil, Ltd., in Britain. A new Glanzstoff subsidiary known as the Deutsche Celta A. G. has been formed with a capital of 750,000 marks presumably to exploit this process.

The present condition of the rayon

industry in Germany is very much better than six or nine months ago. The depression which was common to all German industries following the stabilization of the currency and the settlement of the reparations question is now passing away and the rayon industry is doing exceedingly well. The unfortunate strike in the British coal industry has undoubtedly benefitted the German nation and while it is a long cry from coal to rayon, at the same time it has been established beyond doubt that better general trade means better rayon sales. The British duties were a very serious blow to Germany from which time was required for recovery but it is not yet certain to what extent the recent British price reductions will affect the German manufacturers who will certainly lose by the American reductions. From the latest figures available it would appear that Germany's rayon exports to Belgium, Italy, Holland, Czecho-Slovakia and Switzerland were increasing while those to Great Britain were declining.

Tubize

The Fabrique de Soie Artificielle de Tubize of Belgium must still be ranked as one of the Great European producers. The company is to some extent connected with British Celanese and therefore indirectly with the German combine and has subsidiaries in America and in France. The annual output at the Belgian plants is estimated at 7,500 kilos per day of nitrocellulose and 2,500 kilos of viscose together with 1,000 kilos of acetate. The capital of the company is 25,200,000 francs and the manufacturing profits during 1925 amounted to 30,148,132 francs, or slightly less than in 1924.

Tubize, in common with all the Belgian companies, is having a hard fight at the present time but largely on account of the high quality of the material produced. There is every indication that the industry will pass successfully through the present stage and will probably fare better than manufacturers of medium quality yarns in other countries. The British duties, recent increases in wages and also in the prices of raw materials are given as reasons for the present struggle. Germany possesses a monopoly of the bleaching process and while Tubize gets over the difficulty by bleaching linters in America, the other companies are not so fortunate and the linters have to go to Germany first and be reimported into Belgium. Imports into Belgium come mainly from France, Italy and Switzerland while exports go to Germany, France, Great Britain, Italy, Switzerland and U. S. A. Belgium supplies almost the entire import of artificial silk into Italy.

The Belgian industry is very old-established and while it has suffered from a variety of fortunes there are indications that it will be able to withstand the future storms as and when they arise.

Apart from Tubize, the following companies share the Belgian trade:

Name	*Process*
La Seta	Viscose
Soc. Anversoise de Soie Artificielle	Viscose
Soc. Generale de Soie Artificielle	Viscose
Fabrique de Soie Artif. d'Obourg	Nitro and Viscose
Soc. de Textiles Belge	Viscose
Soiries deMaransart	Nitro and Viscose.

The Obourg concern had an output of about two million lbs. last year but the new plant of Soc. de Textiles Belge should now be ready and considerably augmenting this. Profit in 1925 was equal to approximately $300,000. The Belgian Viscose made a net profit of 23,193,615 francs in 1925 which was almost the same as in the previous year but account must be taken of the alterations in the exchange, if a fair comparison is to be made. Soiries de Maransart lost 854,275 francs in 1925 following a small profit in 1924 and a larger gain in 1923.

Enka

The N. V. Nederlandsche Kunstzydefabriek of Arnhem, commonly known as Enka, is the largest producer in Holland, the only other company being the N. V. Hollandsche Kunstzijde Industrie, commonly known as Breda.

The Enka company has a large plant at Arnhem and two branches at Ede and a distributing depot at Rotterdam. Estimates of production vary but 7,000,000 lbs. for 1925 is probably approximately correct and there is a chance of a 50% increase this year. The company made a profit of nearly 6,000,000 guilders last year and the usual 25% dividend was paid. The company has taken an active part in the formation of subsidiaries abroad although it is said that this process is not to be continued. A very large plant is on the point of completion in England and it is expected that the first unit will be ready in the fall followed by three others next year. Output at this English branch will be 18,000 lbs. per day. A plant is also being erected at Pizzighettone in Italy and another at Vercelli in the same country, the total estimated output in these two cases being over 8,000 lbs. per day. Enka is also extending into France by taking an interest in an important concern.

The high quality of the Dutch artificial silk and the excellent management of the producing firms should enable the industry to hold its own and to expand in proportion to the extension of the world artificial silk industry. Trade figures show that nearly 50% more artificial silk was exported in the first 4 months of this year than of 1925 and a great deal of this was sent to the United States where recent price reductions may now adversely affect the trade for a short while at least. Immediate prospects are not so bright as one would hope for but for the reasons given above the industry in Holland has little to fear in the long run.

The other Dutch rayon company is the well-known Breda firm whose productive capacity of viscose silk reached 1,200,000 kilos. per annum. The net profits in 1925 amounted to 1,460,604 florins against 1,024,669 florins in the previous year. The dividend was maintained at 8%. This firm, like Enka, has extended its activities to foreign countries and controls the Soie de Valenciennes in France which is expected to produce two tons of viscose per day at the end of this year. The Dutch company is also closely interested in a mill, now being equipped at Barcelona. Projects were on foot for the establishment of plants in England and in the United States, but the former project has been indefinitely held up and final particulars are not known in regard to the proposed American subsidiary.

Comptoir Des Textiles Artificiels

The recent amalgamations which have been completed by the Glanzstoff concern in Germany have given rise to rumors of closer working arrangements between certain French, Belgian, Dutch and Swiss manufacturers. It is too early as yet to give any definite particulars but such a move is far from unlikely and the first step in counteracting the foreign competition has been made by the announcement made by the Comptoir concern to the effect that prices are to be reduced. This step was not considered likely as the rising franc exchange in recent months has caused an opposite policy to be adopted in most industries.

The companies forming the Comptoir des Textiles Artificiels are as follows:

Company	*Process*
Soie Rhodiaseta	Cellulose Acetate
Soc. Ardechoise Viscose	Viscose
Soie Artificielle de Besancon	Viscose
Soc. des Crins Artificiels	Viscose Straws. Hair etc.
Soie Artificielle Givet	Viscose
Soie Artificielle d'Izieux	Viscose
Soie Francaise de la Viscose	Viscose
Soc. de Sud-Est	Viscose
Soc. Italienne de la Viscose	Viscose
Soie Artificielle de St. Aubin	Viscose
Compagnie Nouvelle des Applications de la Cellulose	Tubular Yarn known as "Celta"
Soie de Alsace	Viscose
Soie de St. Chamond	Viscose
Soc. de la Sud-est Villeurbanne	Viscose

Other French Companies

Outside of this group, which in addition to rayon producing plants, also controls the chemical firm known as Usines du Rhone, there are several important French companies. Allegre Mondon et Cie., the well-known silk firm of Lyons, have gone extensively into rayon manufacture and are now interested in a new factory being erected in Russia. The French Tubize (Cellulose-acetate) has been mentioned before together with Soie Artificielle de Calais (Courtaulds), Soc. Cuprotextile (Bemberg), Soie de Valenciennes (Breda) and Soieries of Strassbourg. Other companies include Soie d'Aubenton and Soie de Compiegne. The factory at Aubenton is being equipped for the production of so-called "artificial wool." The French Borvisk company has a plant at Nevers.

The extraordinary currency position in France has enabled the industry to work very prosperously and the trade returns for the first half of 1926 show a balance in favor of the French industry of 216,500 kilos. while during the same period in 1925 and 1924 the balance of imports over exports was 247,900 and 854,900 kilos. respectively. The industry is continuing to prosper.

Profits of the various companies during 1925 were on about the same level as in 1924, and need not be given in detail. The outlook for the industry is quite good for the immediate future but with a currency in the unsatisfactory position of the French franc, the ultimate position of the French rayon industry in common with others cannot be visualized.

Emmenbrucke

The Societe de la Viscose Suisse of Emmenbrucke may claim to hold an important position in the rayon industry of Europe although the output at 10,000 kilos. per day is not among the highest. In addition to yarn, such materials as horse hair and ribbon straw are manufactured. The company is connected with Courtaulds, Ltd., of England.

Other Swiss companies include Borvisk and the Viscose Rheinfelden, the latter being associated with Soie de Chatillon in Italy. In addition to actual yarn production, a very large industry in Switzerland is formed by manufacturers who process artificial silk yarn and in knitted goods, embroideries, etc., the Swiss firms have obtained an enviable reputation. The exports of rayon from Switzerland exceed imports but of the latter large consignments are received from Italy and from England. Imports into Switzerland amount at the present rate to well over one million kilos. per annum.

To Erect Rayon Plant in Norway

According to the Manchester Guardian Commercial the Tinfors Paper Mill Co. is planning to erect a plant in Norway. The chief difficulty in the way of the establishment of the rayon industry in this country is acknowledged to be the relatively high cost of labor. Raw material and electric power can be had in abundance but labor and the comparatively small home population render the project somewhat hazardous. A leading Norwegian expert recently said that if arrangements could be made to dispose of the entire production with some thickly populated country such as England, there was little doubt that further developments would take place.

Rayon Experimental Plant and Training School

Illustrated Description of One of the Incidental Phases of Rayon Machinery Manufacture—Problems of Personnel-Training and Research Development Face Smaller Producers—Outline of Equipment Employed in Semi-Commercial Production of Rayon and in Research Activities

By Dr. Alfred G. Perl, F.T.I.

Of Oscar Kohorn & Co., Chemnitz, Germany, and Vienna, Austria

WHEN the first inventions were made public indicating that one of the highly valued textile raw materials, real silk, could be replaced by a product resulting from a combined chemical and textile process, this fact seemed to open enormous possibilities for financial and technical enterprise. The development of rayon and the increased use of it were distinctly marked by inventions referring to four different methods of producing this wonderful fiber, all these methods changing fundamentally the chemical part of the process.

Each new invention was followed up by a small number of more or less original patents and by a very large number of patents of no value whatever and each of these stages marked by a new method of production was followed by a number of financial transactions for the purpose of promoting and floating new companies.

Only very few industrial enterprises (and certainly no other industrial enterprise in textiles) have shown so much financial success on the one side and so many pitiable failures on the other side. It is very interesting to note that all these failures and losses of capital have not frightened parties interested in promoting enterprises, if such new enterprises were only based on and "christened" by some new patents and secret processes.

It is regrettable that the first "man-made" textile raw material has been the field of operation for a great number of chemical and mechanical engineers who mostly had very little experience in managing and running plants producing such quantities as will guarantee financial and technical success.

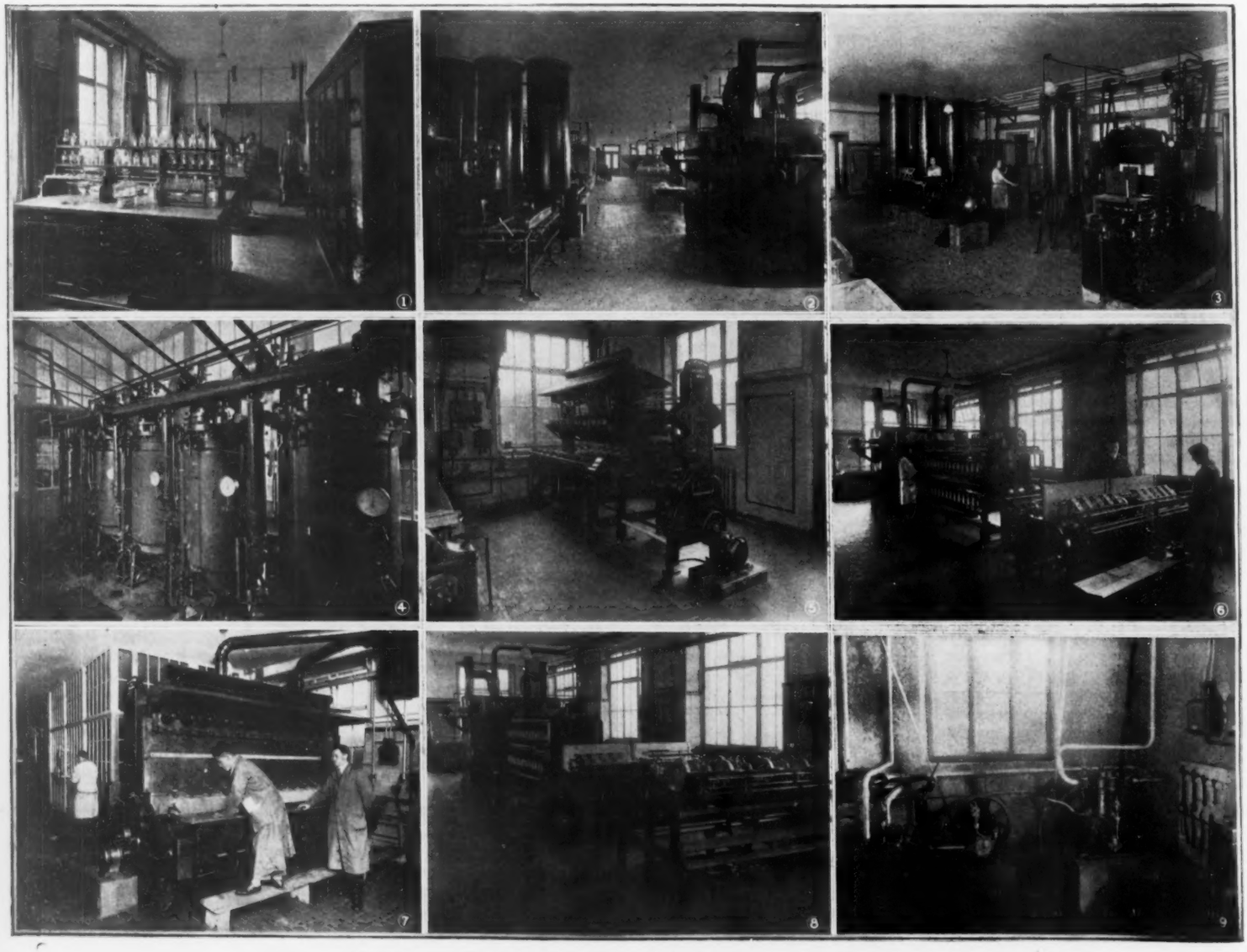
Small Plants Face Difficulties

It must be borne in mind that plants producing small quantities of rayon can never give a product of sufficiently high quality and uniformity, as to be able to compete with standard rayon-qualities. Thus all plants working on a smaller scale are doomed to failure, because it is impossible to produce small quantities of a high quality standard, on a profitable basis.

Such companies as have met with full technical (and therefore financial) success, have spent very considerable amounts of money and a great deal of time in research-work, to develop their method of production. Firms which are manufacturing on a small scale, and, still more, firms which are starting to manufacture in a plant which has not yet been, even partly, written off, cannot afford to spend so much of their time and money on research-work, and very seldom have, in sufficient number at their command, people who are able to deal successfully with the manufacturing process and research-work.

Only a combined organization of comparatively small producers has the possibility, from every point of view, to deal with this research-work and training of men, or else an organization having practical dealings with a number of these small producers, can serve as a center of research and inventions.

It is with this idea in mind that the company with which I am connected



These Views of Training Laboratory are Referred to by Number in the Text

has developed, in connection with the manufacture and sale of rayon equipment, an experimental station and training department where textile and chemical engineers are instructed in the fundamentals of chemical research pertaining to rayon. The accompanying photographs and the following notes illustrate and describe briefly this experimental station.

Training Laboratory

Fig. 1 gives a general view of the laboratory. Here chemists and engineers are trained and initiated in the special chemical work connected with the process, such as controlling viscose solutions, preparing solutions, as well as the chemical control of the process in all its stages. All solutions are tested according to absolutely up-to-date methods, and special care is taken to initiate modern colloidal methods. On the last bench is seen a small solution and spinning unit to produce threads in very small quantities. This installation has nothing to do with the spinning plant proper.

Fig. 2 shows a view through the whole plant. On the left hand side, pulp cutting machine is seen; next to it the typical storage vessel for caustic soda; further on, isolated in a glass cage, is situated the solution room. In the far end, spinning machinery can be seen. On the right hand side, are part of the drying machines, further on, reeling and spinning machines.

Fig. 3 shows a horizontal steeping press, on the left hand side. This is a combined apparatus to treat wood pulp or cotton pulp with caustic soda solution of well determined strength, and afterwards to press the impregnated pulp to such a weight as to contain a certain proportion of caustic only. On the right hand side of the photo, a sulphidising churn is seen, and under it, the dissolver serving to dissolve the product formed in the churn. Right to the front, a special apparatus is seen by which is studied the effect of different ageing temperatures and periods for alkali cellulose.

Fig. 4 shows the battery of viscose storage vessels of vertical type. This battery is placed in an isolated room, the temperature of which can be kept continually to the same degree.

All the machines used for the preparation of the spinning solutions and the storage of other chemical solutions as shown on the last few photographs, are of identical construction and design as the machines and apparatus made for mills producing rayon in commercial quantities.

Parallel Bobbin Spinning

The next few photos show details of parallel bobbin spinning.

Fig. 5 shows one of the patented machines to produce rayon on the parallel bobbin system. This machine is one section of a commercial machine.

Fig. 6 shows the twisting frame and the reeling frame for parallel bobbin silk, and it may be noted that the few cakes on the right hand side *are not viscose spun on centrifugal machine* but represent silk made according to other principles.

Fig. 7 shows parts of centrifugal pot spinning machinery with electrical drive for each individual spindle. It may be noted that all driving parts of the machine are placed entirely in cast iron frames, and are thus protected from any chemical and mechanical tear and wear.

Fig. 8 shows, in the fore-ground, a reeling machine for wet silk made on the centrifugal system, each reel being for two hanks only and with automatic stop arrangement to stop the reel in case a thread breaks.

Fig. 9 gives a general view of a refrigerating plant and compressors. New engineers are trained not only in the proper running of the chemical and textile machinery but they are also given instructions concerning refrigerators, compressors, vacuum pumps and similar general devices.

Future of Rayon Depends Upon Research

Better Knowledge and Control of Physical and Chemical Properties Essential if Tensile Strength, Elasticity and Resistance to Water Are to be Increased Materi ally—Complexity of the Problem Illustrated—Active and Intelligent Fundamental Investigation Necessary

By Dr. W. F. Edwards

THE future of the rayons depends upon improvement in certain qualities and this improvement must be brought about by intelligent and active research of a high order. The research must be intelligently directed for the same reason that it must be active. Both tend toward more speedy and assured returns than can be expected generally from trial-and-error methods.

Trial-and-error enters to some extent into every investigation but taken alone trial-and-error is a disappointing, expensive and time-consuming method that often has stood in the way of better and more secure and far-reaching methods.

Many will see the above as an alarmist statement but anyone who has been following the applications of rayon must be convinced, notwithstanding the increasing millions of pounds used per annum, that the rayons are still on trial in many particulars apparently depending superficially on insufficient tenacity (strength), lack of elasticity and too low resistance to the action of water, but intrinsically depending on a better knowledge and control of the physical and chemical properties of the materials at each step of the manufacturing processes.

Anyone who has followed the development of the rayons and their applications in the textile industries must admit that they have already taken a permanent place as representing a high order of development of a handicraft textile fiber which has already found a somewhat extended and fairly well defined use as an accessory textile fiber; i. e. a textile fiber that finds its best place when used as an accessory in admixture with silk, wool or cotton for the purpose of giving a pleasing variety of patterns rather than when used alone to produce fabrics wholly of one of the rayons.

Increase of strength, elasticity and water resistance would be advantageous in nearly all cases where the rayons are used as accessory in mixtures but would be of still greater benefit if developed to a point where the rayons could be used successfully as an independent textile fiber in competition with silk, wool and cotton in a great variety of woven and knitted fabrics.

It does not require a super-optimist temperament to suggest that the rayons may be developed to this point by intelligently directed and continuous research. It only requires a little close observation of what has been accomplished in this and other industries to see that no case of improvement is hopless. But in the case of the rayons we are quite justified in believing that their properties are sure to be improved by concentrated research.

It is not my purpose to outline a program of scientific research for the improvement of strength, elasticity and water resistance of the rayons but rather to give the non-research reader some idea of the complexity of the materials used and some idea of the methods of scientific investigation with the main purpose of indicating that this type of researches is not such that we can lay down a definite procedure from which we may estimate time and costs required but rather of a nature requiring faith in ultimate success if the investigations are continuous and directed by competent directors.

Improvement in the qualities of rayon fibers must come from studies of the chemical and physical structure of the materials at each step in the manufacturing processes and is to a great extent involved in a study of the size and structure of particles in relation to the medium in which they are distributed.

Such studies to be most successful must be carried on under the direction of trained and experienced men who have shown adaptability in applying the most modern knowledge and methods of chemistry and physics to researches.

Essential Steps

The essential steps in the four common processes used in the manufacture of rayons to which the particle size and structure studies may be applied to advantage are of much the same general character. Starting with purified bleached cotton linters or spruce wood paper pulp pressed and cut into sheets, both of which may be designated as purified cellulose, the steps are:

(1) Chemical treatment of the purified cellulose
(2) Solution of the product of (1) in a suitable solvent

A writer in the 1926 Annual Review and Forecast Number of TEXTILE WORLD expressed the opinion that "there is almost no limit to the extent to which a research chemist, working in conjunction with a research engineer, may eventually mould the product of a chemical solution—and control the strength, physical characteristics, appearance and spinnability of the resulting fiber."

In this opinion, Dr. W. F. Edwards, author of the accompanying article, evidently concurs. However, as he points out, such results can be obtained only through intelligent and active research work of a fundamental character.

Dr. Edwards does not imply that pure science investigations are not being conducted by rayon producers. In fact, it is known that extensive programs are under way. However, the chemical and physical problems are, as he illustrates, so complex that it is necessary always to keep in mind this one thought: Synthetic fiber production, possibly more than any other phase of the textile industry, involves research which offers no immediate return. It is a "long pull" investment which some day will pay dividends far beyond the vision of our most imaginative scientists.

For this reason, Dr. Edwards' outline of the type of problems facing the industry is of real interest to all who have faith in the future of rayon.

(3) Filtration and ripening of these solutions
(4) Spinning into threads
(5) Regeneration.

Chemical Treatment

The first step, chemical treatment, may be conveniently divided into:

(a) Esterification in the cases of the nitrate and acetate processes
(b) Alkaline hydrolysis in the cases of the viscose and cuprammonium processes.

Esterification of cellulose is a much more complex subject than appears from the simple statement that it consists in treating purified cellulose with acids. A voluminous literature running into hundreds of thousands of titles to which may be added tens of thousands of patent specifications, has grown out of the investigations of cellulose and its derivatives since the discoverey of gun-cotton, cellulose hexa-nitrate, in 1846, and of cellulose acetate 20 years later.

Particle size in the sense that it is used in a study of the chemical and physical structure of solutions and the separation of substances from solution was suggested as early as 1861 by Graham in his published work on diffusion. He used the names crystalloid and colloid to indicate the difference in the behavior of substances when separating from aqueous solutions. He found that some substances, crystalloids, always showed a crystalline structure when separating from solution and that others always showed a tendency to separate out of solutions in gelatinous, amorphous masses.

Graham showed that these two groups differ from one another in two important respects. On the one hand the crystalloids diffused readily through porous membranes such as pig's bladder, parchment paper, etc.; on the other hand the colloids did not pass through such membranes and showed a marked tendency to form aggregates in solution and were singularly inert chemically and held in solution by a slight force.

Difference in size of particle was quite naturally suggested as an explanation of the difference in action toward passage through porous membranes and particle size was considered as a characteristic of the substances that would not diffuse through membranes and tended to the easy formation of aggregates in solution and such substances were thought of as a class set apart from all others by these characteristics.

Today we do not consider a class of substances as colloids but we consider all substances as capable of taking on a colloidal state or as capable of showing colloidal behavior under specified conditions.

Solutions Grouped

Solutions based on the particle size of the dissolved substance (disperse phase) can be placed in three main groups with limits which may overlap somewhat according to conditions:

(1) Those in which the particles are less than one micro-micron* in diameter as in solutions of crystalloids in which the particles cannot be seen with the most powerful ordinary microscope or ultra-microscope and which pass through filter papers and porous membranes readily without clogging.
(2) Those in which the particles have diameters greater than one micro-micron and less than 100 micro-microns and which cannot be seen with the most powerful ordinary microscope but which can be made evident by the ultra microscope or the Tyndall effect and which do not pass through hard filter paper or porous membranes.
(3) Those in which the particles have diameters greater than 100 micro-microns and which can be seen with a powerful ordinary microscope and which do not remain permanently in solution but settle out or rise to the surface according as the specific gravity of the dispersed substance is greater or less than that of the solvent liquid as mud from muddy water or cream from milk respectively.

The solutions of category (2) with particles from 1 to 100 in size usually show colloidal behavior and are the solutions which are of interest to the student of cellulose products. These colloidal solutions show two quite definite tendencies which make it convenient to separate them into two groups: (a) Those tending to form jellies on standing or on cooling and which resist coagulation by mineral salts and (b) Those which are easily coagulated by mineral salts and do not tend to form jellies. The colloidal solutions used in the spinning of rayons are of this latter group.

A partial understanding of colloidal behavior may be gotten by starting with a bubble of air rising through water. The bubble is approximately spherical, i. e. occupying the space of least surface, and acts as if the air was confined in a thin elastic membrane which bursts on reaching the surface of the water. This same elastic membrane effect holds for the surface of contact with air of water in beakers or the larger surfaces of rivers and lakes. Such thin elastic membrane effects are characteristic of the surface of separation, the interface, of a liquid and any substance with which it has contact. This interface has a definite strength and energy content for any particular liquid and any particular substance in contact with it under specified conditions.

Substitute a cube of a solid homogeneous substance of one cubic centimeter capacity, a cube whose edge is one centimeter long, for the bubble of air. Submerged it will have six faces of one square centimeter each in contact with the water. Cut the cube into tenths in three directions by planes parallel to its faces, making one thousand cubes of the same total volume but with the contact surface increased ten times and the edge of the cube decreased to one tenth. Continue the division in the same manner and we shall have a series of results as follows:

Number of Cubes	Total Surface Square Centimeters	Edge of Cube Centimeters
1	6	1
1000	60	.1
1000000	600	.01

This shows that for each subdivision the number of cubes increases one thousand times, the total surface increases ten times and the edge of the cubes decreases to one-tenth, while the total volume remains the same.

The edge of the cube would be 100 micro-microns at the fifth subdivision when the number of cubes would be 1,000,000,000,000,000 and the total surface would be 600,000 square centimeters. The size of particle between that of the fifth and seventh subdivisions would be of the size usually taking part in colloidal states. The thousand trillion of tubes of the fifth division are all alike and approach the size of the finest suspensions and the coarsest colloidal particles. Distributed through a large volume of solvent they would not make any noticeable change in its properties but as the volume of the solution is diminished a point will be reached where cubes would be so close together that the inter-face surfaces would form a continuous net work acting to give viscosity and other properties to the solution.

When this concentration is reached slight changes of temperature, surface potential, ionization, pressure, or chemical reaction may make marked changes in the properties of the solution.

A solution with the disperse particles all of the same size and shape and of homogeneous material would rarely be found in practice to fulfill this ideal condition. There would be quite generally molecules of different chemical structure and different sizes and shapes forming a variety of molecular aggregates both as to size and kind.

The solvent itself may be (and probably is) a complex of aggregates of different sizes. Water, for example, which used to be considered as a pure homogeneous liquid both physically and chemically is now known to be a quite highly associated liquid; i. e. it is made up of a variety of molecular aggregates having a considerable range of mass and size.

Illustration of Complexity

A very good illustration of the possible complexity of a solution in a colloidal state is furnished by the esterification and solution of the esters formed in the alcohol-ether solvent in the preparation of the spinning solution for making rayon by the Chardonnet process, and this in turn will indicate the possible complexity of the spun thread.

The study of the operations from the purified cellulose to the spun thread in the Chardonnet process will also furnish a good illustration of the complexity of the problems and the difficulties to be overcome in an investigation having for its aim a complete knowledge of the chemical and physical structure of the materials entering into the various steps in the manufacture of rayon.

Purified cellulose itself, to begin with, is a more or less complex substance probably both chemically and physically as might be expected from the nature of the sources from which it is made.

The nitrates are made by treating the purified cellulose with a mixture of concentrated nitric and sulfuric acids. A mixture of nitrates is formed but by controlling the time, temperature and pressure of the reaction and the proportions and concentrations of the two acids it is possible to produce a mixture of nitrates which shall be chiefly the desired nitrate or nitrates.

We know at the present time very little of the molecular aggregates that form in these mixtures of nitrates and we know as little of the effect of proportions on the physical properties of the solution or those of the spun thread made from the solution.

What Research Might Do

A careful, painstaking investigation might discover controls in the various steps that would give a mixture of nitrates that, dissolved in the alcohol-ether solvent of certain determined proportions at a definite rate and at definite temperature and pressure, would produce by coagulation at a determined rate and temperature and pressure in a determined bath, the water-resisting, strong, elastic thread that would make the rayon an independent fiber that could be used alone to produce a great variety of textile knitted and woven fabrics that would wear, stand laundering etc., as well as similar fabrics made from silk, wool or cotton.

It will be inferred, correctly, from the above illustration that further researches should stress the physical nature of the complex materials rather than attempt to learn the chemical and physical changes relating to any chemical individual in a quest for complete knowledge of the materials under consideration — at least until such time as some individual chemical derivative of cellulose can be easily produced and isolated, in which latter case it might be found advisable to stress researches on this individual.

X-ray Spectrographic Methods

The X-ray spectrographic methods as developed in the study of crystals should receive a foremost place in any study relating to size and systematic arrangement of particles in substances. It is a method that may be developed so as to be of as broad application and as prolific of results as the ordinary spectroscope.

The principle of the X-ray spectrograph is the same as that of the ordinary spectrograph, the difference being

(*Continued on page* 54)

*The micron is the one-thousandth of a millimeter and the micro-micron is the one-thousandth part of a micron or the one-millionth part of a millimeter or approximately the twenty-five-thousandth part of an inch.

Progress in British Rayon Industry

Despite Labor Troubles, Existing Companies Have Held Their Own—Price Reduction Has Been Important Factor and Promises to Be Increasingly So—Few New Concerns Formed Thus Far This Year —Permanent Future for Industry Indicated

By J. Guthrie Oliver

(Prepared Especially for TEXTILE WORLD*)*

This country has had no monopoly on market uncertainties in the rayon field during 1926. Great Britain, for instance, went through a very similar period of instability and lack of confidence as affected the American trade last spring. Price reductions were made there at about the same time as they were put into effect here. Since that time, recovery has taken place and most experts connected with the industry forecast healthy expansion in the future. The attached article brings up to date, information regarding the rayon situation in Great Britain.

AT THE end of 1925, the immediate outlook in the British rayon industry was far from good and this undesirable position has been rendered worse by the influx of very moderate class foreign yarns in large quantities prior to the imposition of the customs duties on July 1, 1925. During the first few months of the year, however, there was increasing evidence of better trade and despite the labor troubles, this was actually kept going. At the time of the outbreak of the coal strike, the industry was looking forward to a prolonged period of good trade and there is little doubt that had national conditions been more favorable, an unequalled record would have been set up.

The policy of Courtaulds Ltd. is to preserve details of output for their own use but as this firm is responsible for almost the whole of the production of viscose silk some idea of the output may be gauged from the official returns of yarn upon which excise duty has been paid. In the first three months of the year the total was 6,081,395 lbs. and for the six months it was 12,033,348 lbs., showing that production for home consumption was maintained at an almost equal level throughout the period.

Rayon Imports

In the Annual Review issued by TEXTILE WORLD in February this year details were given of the imports of rayon yarn into Britain and it was shown that the effect of the customs duties had been to almost close this trade. The subsequent returns have been as follows:

1926	£	Lbs.
January	26,493	110,116
February	26,215	105,165
March	43,037	177,005
April	49,369	* 213,793
May	28,330	129,156
June	38,250	197,171
July	37,525	201,957

It will be seen from the above table that the average value per lb. has fallen rapidly and also that though the figures are a mere fraction of those before the duties, there is a tendency for them to rise. I shall refer again to this matter in dealing with the recent price reduction effected by Courtaulds.

Owing to the fact that official figures of import sources are not yet available, it is impossible to give detailed information of the effect of the duties upon the various markets but it is commonly acknowledged that all countries have suffered a severe setback in trade with Britain.

Rayon Exports

It is pleasant to be able to record once again that on the export side of the account steady progress has been achieved and in the following tables details are given of rayon yarn exported and of rayon manufactured goods and cotton and rayon mixture piece goods exported:

British Rayon Exports—1926

	Yarn lbs.	Manufactures (Excluding Apparel and Embroidery) w	Cotton and Rayon Piecegoods, Sq. Yds.
January	589,989	444,709	4,248,282
February	559,416	485,881	4,898,400
March	465,342	426,899	4,640,730
April	476,540	338,031	3,626,856
May	420,309	395,297	4,408,309
June	514,045	455,966	5,239,179
July	716,825	572,906	Not yet known

Details as to the destinations of the purely rayon goods are not yet available but in regard to rayon and cotton mixtures the order of importance for the six months is as follows:

Destination	*Sq. Yds.*
1. British India	8,148,479
2. Canada	2,242,726
3. Australia	1,521,252
4. Dutch East Indies	1,294,895
5. Egypt	1,138,962
6. Brazil	879,857
7. Colombia	879,598
8. Central America	862,762

Few New Companies

While the year 1925 was remarkable on account of the formation of new rayon companies, similar progress has not been seen during 1926 and few newcomers have made their appearance. An exception to this, however, is Raysheen, Ltd., formed early this year with a share capital of £350,000. The intention of the company is to commence the manufacture of rayon at Gracehill in the county of Antrim in northern Ireland. The viscose process will be employed and a plant is being erected by Dobson & Barlow, Ltd., of Bolton with an output capacity of 1½ tons per day. This will be the first rayon plant in northern Ireland and it is hoped to develop demand among linen manufacturers in the Belfast area. Production is expected in the fall of this year.

Among the other new companies mentioned in the TEXTILE WORLD Annual Review, British Visada has now been officially started. Rayon Manufacturing Co. has had great delay but is now actually producing on a small scale. Apex is ready and Western Viscose will be before long. Nuera will be some time in getting going. Bulmer Rayon is producing well and so is Kirklees. The foreign companies proposing to manufacture here have all been silent with the exception of British Enka who will have a 4,500 lb. unit in operation in the fall and next year will be producing 18,000 lbs. per day at Aintree near Liverpool. Nothing further has been heard about the proposed plants to be erected here by Snia Viscosa, Breda or German Vistra.

In the machinery section, great interest has been occasioned in Dobson & Barlow's plant which is being erected for British Visada, Raysheen and Western Viscose and it is hoped that very satisfactory results will accrue. News is just to hand that Oscar Kohorn's of Chemnitz are to have their machinery manufactured in this country by Jn. Hetherington & Sons, the well-known textile machinists of Ancoats, Manchester.

The plant erected by Kemil, Ltd., at Peterborough is working on a small scale and producing "Celta" tubular yarn on the lines of La Compagnie Nouvelles des Applications de la Cellulose in France. Little has been heard of other producers mentioned in the press last year but no doubt when the financial position is more satisfactory, further company flotations will come off.

Price Reduction

On July 1, 1926, after a long period of stable prices, Courtaulds Ltd. reduced their charges by amounts varying from 3d. to 1/3 per lb. on the finest denier qualities and a new phase of the industry was entered upon, inasmuch as competition from abroad was given a serious check and the possibilities of the new companies were made less promising. The importers of yarns immediately reduced prices a few pence below Courtaulds' schedule but it is unlikely that great headway will be held unless a more substantial reduction is made.

Courtaulds' Position

During this period under review Courtaulds have been distinctly active and proposals have been put into force for the erection of a new plant at Holywell near the present one at Flint in North Wales. It is also understood that the firm will shortly be producing acetate silk in addition to viscose on a fairly large scale. Acute disappointment was occasioned on the Stock Exchange by the reduction in the interim dividend from 1/6 to 1/3 per share. In view of the enormous capital expenditure that the firm is making out of profits (including the financing of the new Glanzstoff Courtauld project in Germany) and in the light of the continued coal dispute, the reduction was perfectly warranted and was purely a matter of caution on the part of the directors. Again, while the price reduction has, so far as the export trade is concerned, been already justified by increased demand, it is unlikely that home consumption can make rapid strides under the depressing labor conditions resulting in most cases in organized short time among the manufacturers.

British Celanese

The British Celanese Co. had not a very satisfactory report to present to the directors and is suffering from the excise duty which it has been unable to pass on to its customers. According to the amount of silk excised, production has been considerably lower than the 6 to 8 tons per day generally supposed but a large increase has taken place in the fabrication department.

The introduction of the Italian Sniafil or socalled "artificial wool" raised some interest in the early part of the year but surprisingly little is heard of this now. Some cotton manufacturers are however making excellent use of the German Vistra staple fiber and some excellent cloths have been exhibited by the Artificial Silk Filaments Syndicate, Ltd., of Runcorn which is also interested in this trade.

Outlook for Consumption

In view of the falling price of cotton and the promise of another bumper crop, the textile industries, in any way connected with the cotton trade, have undoubtedly felt the reaction and nothing is calculated to give a fillip to the rayon industry more than the reduction in yarn prices effected in July. There is evidence on every hand of an increased use of rayon by cotton manufacturers but it is obvious that the prices of cotton and rayon must stand in some sort of proportion to each other or the manufacturer will be forced to adopt mercerized cotton or other material in preference to rayon.

It has been found from examination that so far as Europe is concerned the consumption of rayon and the purchasing power of the various nations are matters which are closely

(Continued on page 56)

SECTION II—USES OF RAYON

Rayon in Woolen and Worsted Fabrics

Steady Progress Being Made in the Use of Rayon in Men's Wear and Dress Goods Fabrics—Trade Customs Have Retarded Natural Growth—Importance of Using Quality Rayon Yarns—Illustrations of Typical Successful Fabrics Using Rayon

By Royal Little

Treasurer, Special Yarns Corp., So. Boston, Mass.

TIME alone can tell the place that rayon will eventually fill in the woolen and worsted fabrics field. While progress is being made yearly in increasing the

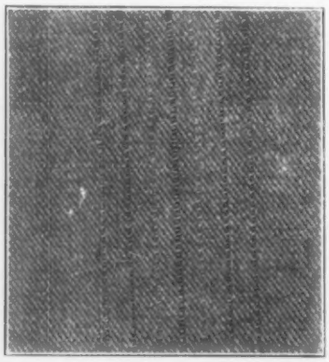


Fig. 1

uses of the various types of artificial silk in this industry, it can safely be said both as far as poundage of rayon consumed and yardage of finished goods woven are concerned, that only a good start has been made so far. The two chief obstacles which rayon encounters here are first, the inertia of the manufacturer; and second, the customs of the trade.

Inertia of Manufacturer

The inertia of the manufacturer is particularly evident in the case of decorated fabrics where the amount of yarn used for effect threads is relatively small. It is quite natural in

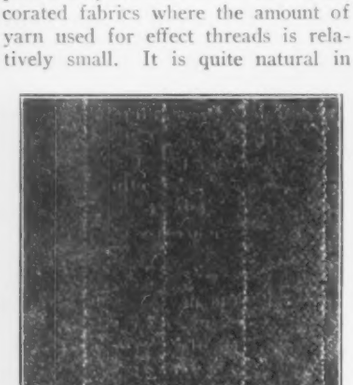


Fig. 7

these cases, especially where the apparent saving amounts to only two or three cents per yard, that the manufacturer should hesitate about substituting what is to him a comparatively unknown quantity for a fabric component with which he is entirely familiar. Very often too his mind is filled with prejudices and fanciful rumors regarding the mysterious disappearance of rayon from fabrics during dyeing and finishing. Unfortunately the mill man is frequently so dead set against artificial silk that he will not experiment, even along the most promising lines, and determine for himself the particular

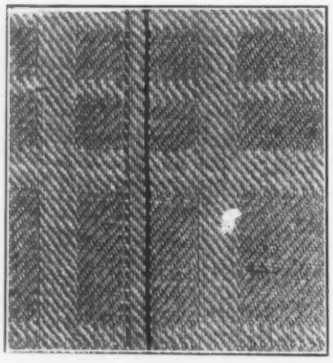


Fig. 2

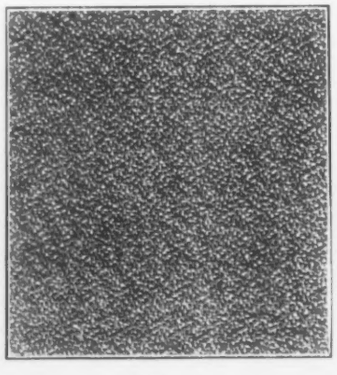


Fig. 5

advantages or disadvantages of rayon so far as his own case is concerned. One is also likely to overlook the fact that every cent per yard saved is ten thousand dollars per million yards woven.

Customs of Trade

The custom of the trade which more than any other has held back the normal growth of rayon use in woolen and worsted men's wear fabrics is the boil-off test. Dress goods fabrics curiously enough are rarely put to this test, with the result that artificial silk is used much more generally in high grade women's wear than in suitings of similar quality. The test, which consists of boiling the fabric in strong caustic soda solution, is beautifully foolproof and is consequently of great value to the cutting-up trade. As all animal fibers dissolve and vegetable fibers remain practically unchanged during the treatment, it is simple to determine

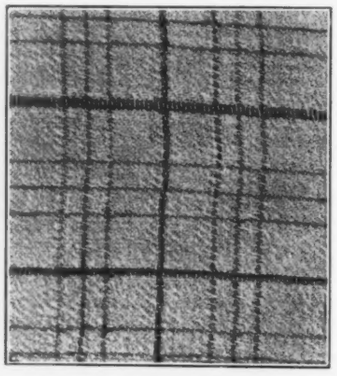


Fig. 3

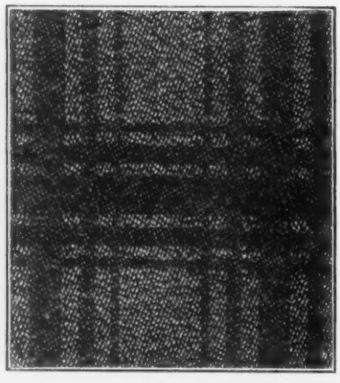


Fig. 6

whether a fabric is all wool or not.

No type of rayon yet produced will dissolve with the wool in this test, with the result that the manufacturer cannot label his goods "All Wool" as he may, for instance, if real silk is used for decorations. While theoretically and often practically this distinction is insignificant where only the effect threads are involved, the mere fact that the rayon-decorated goods cannot be labelled "All Wool" immediately ostracizes them in the eyes of the bulk of the trade. This situation will change in time, though probably slowly. During the last year more progress was made than heretofore in overcoming this difficulty, due chiefly to the quantities of

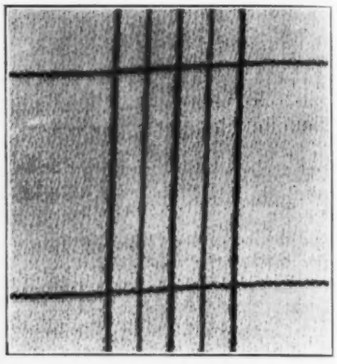


Fig. 4

imported samples shown of high grade woolen and worsted men's wear, indicating the successful use abroad of rayon as a striping yarn. This season saw a large increase in the number of "All Wool But the Decorations" labels used as a compromise. Eventually this distinction too will disappear.

Piece Carbonizing

Perhaps the next most important custom affecting the use of rayon, which in this case is one of manufacturing technique, is that of carbonizing in the piece. On account of the fact that most artificial silks are primarily pure cellulose, and all cellulose matter is dusted out of a woolen

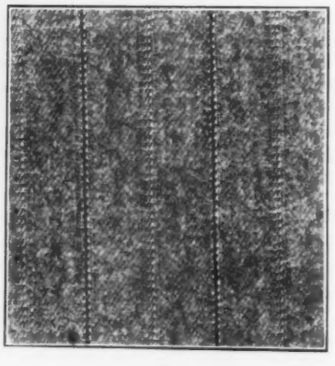


Fig. 8

or worsted cloth by the piece carbonizing process, little thought was given to the possibility of using rayon in this class of goods.

It has been proved during the last

year that acetate silk of the celanese type stands up perfectly under the aluminum chloride process, and the same is true in the case of the sulphuric acid process if certain precautions are followed. This discovery is not of as great importance as it might at first seem, on account of the fact that carbonized goods are perfect all-wool boil-off fabrics, but as celanese will not boil off, it cannot be used in these fabrics with but rare exceptions without defeating the purpose of the carbonizing operation. As soon as the boil-off requirements are altered, however, this feature will be of great value.

Importance of Quality

Every trade using rayon has at one time or another gone through the stage of attempting to save money by substituting cheaper grades of yarn, or the product of unreliable producers for the apparently high priced article they were using satisfactorily. Almost invariably this has ended in accomplishing the least desired result; namely, increasing costs by increasing the waste and seconds. The same temptations will always be before the woolen and worsted mill using rayon; the apparent opportunity of saving money by substituting inferior yarns. It is advisable, however, for these mills to use only the product of the large established domestic rayon producers, and when buying indirectly through a converter to know the source of the latter's supply.

Description of Fabrics

Figs. 1 to 6 illustrate some of the typical uses of rayon in worsted dress goods fabrics. Fig. 1 shows the back of a plain twill ground cloth decorated with warp threads of rayon. Unfortunately the colors could not be made to show well in the illustration. While this particular sample happens to be a union-dyed cotton warp worsted filled fabric, the same general effect is much more common in all-worsted goods of both high and low quality. Fig. 2 illustrates the use of rayon warp decorations in conjunction with a fancy plaid. This cotton warp worsted filled fabric is woven in the gray with the exception of the multi-colored rayon decorations, and then the ground is cross-dyed to give a distinct two-color tone to the material. Fig. 3 is a heavily decorated all-worsted piece dye showing the use of rayon in both warp stripes and filling checks. Fig. 4 has the same treatment of the rayon but is a bleached white ground.

Fig. 5 has a solid worsted warp with a rayon and worsted slack twist for filling. This fabric is made in the gray and cross-dyed in the piece into any two-color combinations desired. Fig. 6 shows a material of exactly the opposite construction; it is a solid worsted filling with rayon and worsted hard twist warp yarn. Like Fig. 5 this fabric is also cross-dyed in the piece.

Figs. 7 and 8 illustrate two distinctly different types of decoration on woolen men's wear. The former represents the inexpensive type of cloth made with cotton warp and shoddy filling. The striping in this case shows only on the face of the goods. This particular fabric was made with yarn-dyed cotton warp and stock-dyed shoddy filling, and was speck-dyed in the fulling mill, thereby requiring speck-dye resist rayon for decorations. The same fabric might have been made with carbonized shoddy stock to eliminate the necessity of speck dyeing, or could have been woven in the gray and union dyed. Fig. 8 shows a comparatively new type of fabric which is made the reverse of Fig. 7; namely cotton filling and wool warp. On light colored stock-dyed fabrics of this sort it is often possible to use uncarbonized stock and still not have to speck-dye as in the case of darker shades.

In addition to the fabrics shown in the photographic reproductions, rayon has been used extensively in tropical worsteds for pencil stripes and recently several styles have been offered with solid rayon and worsted twist in both warp and filling, giving a high luster pepper-and-salt effect. Cap and knicker cloth designers have used quantities of coarse rayon threads and heavy two-color twists to brighten up their fabrics by means of large checks. Light overcoating materials have recently been shown with rayon high spots thrown to the face of the fabric. All of these lines indicate a definite trend toward the acceptance of artificial silk as a standard decorating material for woolen and worsted goods of all kinds.

Silk Trade Finds Some New Uses for Rayon

Ribbons and Hatbands Increasing Consumption of the Fiber—Competes in Special Fabrics, but Not in Staple Crepes—Finer Sizes Necessary for Use as Filling in These Fabrics—Rayon Taffetas in Demand

By William A. Spafford

IN CERTAIN directions the silk trade increased its consumption of rayon during the latter part of 1925 and thus far in 1926. As a generality, though, with the type yarn produced today, the sizes and the price being considered also, it can be said that rayon has made little inroads on the consumption of raw silk as far as the broadsilk manufacturers are concerned. The ribbon manufacturers, not only in the cheaper grades of ribbon but also in many more expensive qualities, have made some progress in adapting rayon to their needs. Hatband manufacturers have gone over to its use in many instances, as rayon seems to be well adapted to this type of goods. The large production of staple crepes, however, still finds that rayon permits no special economies nor does it warrant turning to it on the grounds of improved appearance or wearing quality.

Ribbon manufacturers for some years have used rayon for many cheaper types of goods. It has proved to be well adapted for the purposes intended and the use of it last year probably showed a natural increase. The use of rayon in either warp or filling cuts down production costs and it is believed that rather large quantities are disposed of to the trades that use it to tie up gift boxes where wear is not paramount. Its use in hatbands is also understood to have increased in the past season or two. The styles today call for variegated colorings and many men buy two and three bands where they formerly accepted the drab black band that went with the hat. The mills weaving hatbands have enjoyed good business and have increased their output with a consequent jump in the demand for rayon for this particular purpose.

Use in Taffetas

During the spring a revival in the use of taffetas accounted for some increase in the demand from broadsilk mills. Rayon taffetas in two toned effects have had a good call for some seasons but they were particularly good last spring.

Satins have accounted for a fairly large consumption of rayon right along. Rayon satins for street wear have never enjoyed any large popularity as the women of this country have objected to the excessive luster of this type of goods.

Rayon satins, however, have come into use in another field and that is for casket linings. Formerly the higher grades of silk were used exclusively but not any more. The large casket manufacturers are turning more and more to rayon fabrics. One large silk house recently stated that their business in casket linings had been cut in half with their former customers taking rayon satins instead of the more expensive silk linings.

While increasing its usefulness in the business of dying, rayon has maintained its place in the field of dyeing. Novelty houses continue to make use of the fact that the employment of raw silk together with viscose rayon or viscose and cellulose acetate permits color effects that cannot be obtained in piece-dyed goods by any other means. Fancy goods of this character have not experienced any very heavy demand so far during the year but stylists look for better things for next season. More elaborate costumes will call for more elaborate materials with a consequent increase in the demand for novelty materials.

Two developments during the year 1926 were calculated to give rayon a real opportunity to make substantial progress in the field of staple broadsilks. The first was the depression in business noted during the latter part of the spring. Competitive conditions were very marked at this time and as a matter of fact are still prevalent today. Competition forces the making of goods at a price. Mills are forced to use every expedient to reduce production costs and still turn out a marketable product. This situation, coming at a time when the rayon producers cut their prices sharply, should have resulted in the wholesale substitution of rayon. Silk manufacturers had to find some means to lower costs without any great sacrifice in quality. If rayon could fill the breach, this was the time for it to prove itself.

The means adopted by broadsilk mills at this time was of an entirely different character. Instead of attempting to use a silk and rayon filling the trade found it advantageous to retain the all-silk character of their product. Weighting on a greater scale was resorted to and this fact has put off the day when rayon is to be a factor in the manufacture of the staple silk crepes. If under present conditions rayon offered anything of value to the silk manufacturer it would have been seized upon in June, July and August of the current year. The heaviest silk thread used to any extent is an eight thread which runs to a denier of one hundred and twelve. The regular 150 denier rayon and even the 100 denier rayon yarn is out of the question. A very much finer size must be used.

Even the 40 and 50 denier rayon combined with one or two ends of 13/15 raw silk produces a thread that is somewhat too heavy as a four thread crepe has a denierage of 56. On top of this comes the fact that the price of the very fine rayon yarns is so high that the saving is practically nil. If rayon offered anything to silk manufacturers it would have been discovered some time ago. Any considerable increase in its use will have to come through changes in the nature of the yarn itself or else a radical change in the liking of the American consumer for the crepe fabrics that are so popular today.

Conservative Rayon Use Best in Women's Wear

Best Selling Effects in Worsteds Are Subtle Combinations Which Avoid Flamboyant Decoration—Many Wool Mills Learned Rayon Game This Year and Will Play More Skillfully in Coming Seasons—Must Get Cooperation of Distributor and Follow Fashion's Mandates—Rayon Featured in Men's Wear Tropical Fancies

By William B. Dall

THE use of rayon in woolens and worsteds for men's wear and dress goods may be spared constant fluctuation with the whims of fashion only by the most adroit and conservative handling. Brilliant creative work in the designing room and strong promotion on the sales end, might develop a season devoted to much rayon decoration in the women's wear field, though some who tried it last season might doubt even this. Certain it is though, that for a year-in year-out utility, the use of rayon in wool goods must be subtle and restrained. When the general public wears wool goods in preference to other sorts of fabrics, it is because of their durability, warmth, dignity, color and texture values or because most other people on similar occasions wear them. Of these factors, utilization of rayon in conjunction with wool can hope to influence only the color and texture values, and this influence must be applied sagaciously or it will adversely affect the cloth's rating by the consumer in one of the other elements which determine his or her choice.

Best Field Is Women's Wear

From the outlook in this year of 1926, the largest field for the use of rayon in wool goods appears to be in the women's wear division of the market. The element of decoration has always been a strong ally of fashion in this division, and, after all, any one fashion is principally the style which one group has thought most decorative at that particular time.

In men's wear there has developed an almost staple use of rayon in certain sorts of tropical weight fabrics, but beyond that not much progress has been made. There are those who foresee that men's fancy in fabrics will turn into channels previously regarded as wholly feminine. This may be, but at least it is far off and, from the practical standpoint of considering the seasons in the more immediate future, it is nothing on which the rayon industry may count. In the women's wear field however, changes are often rapid and complete, and the hope for permanence in use of rayon with wool lies in the flexibility with which it may be adapted to follow many different vogues.

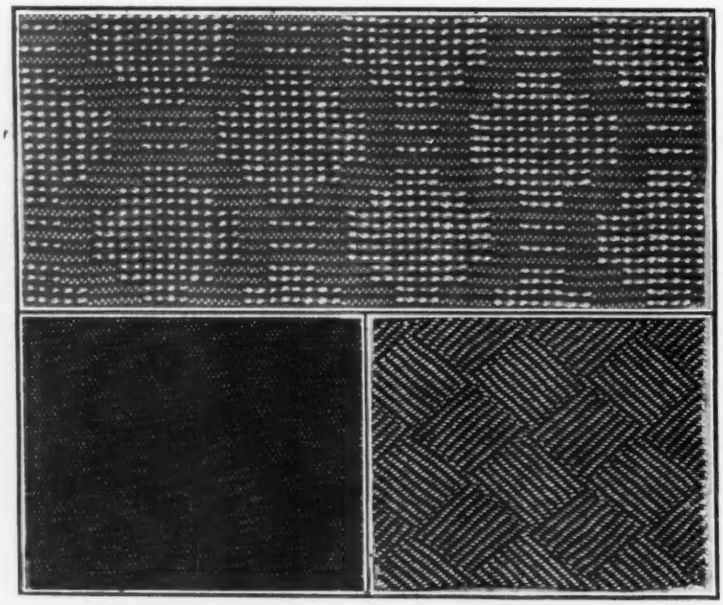
A year ago at this time there were many flamboyant fancies involving rayon decoration in preparation in the women's wear market. In all too many instances the history of these goods is that they got no further than the mill agent's sample books. If the manufacturer and his designers have turned this experience to good use, there will be a higher percentage of successes this season. The preparation of last season's multiplicity of decorated lines has at least taught the technique of rayon use in quarters where it may not have been known before. In such quarters this knowledge is going to be turned to good and useful ends during the coming seasons. This does not mean that mills which did not get far with rayon mixtures are going to drop them. Many merchants in the latter class admit that they have just made a beginning and that rayon presents an opportunity for injection of new and needed life in the women's wear field so far as wool goods are concerned, which no progressive manufacturer can afford to neglect.

Users Seek Knowledge

With many in the women's wear field the question is not whether or not to use rayon, but how to use rayon. Experimentation should pay high dividends in this field, for the possibilities have by no means all been tried. In a most general way there appear to be three ways in which rayon may be introduced into a piece of wool goods. They are (1) Denier rayon in warp or filling, forming separate picks from the woolen or worsted yarn; (2) Use of woolen or worsted yarn twisted with rayon; (3) Use of yarn spun from a mixture of wool and shorter stapled rayon, usually obtained from rayon waste. A fourth way for the introducing of rayon is in the form of embroidery on the fabric, but this is usually done after the fabric comes from the loom.

Where much of the rayon used is brought to the surface of the fabric, there are a number of effects which are likely to be produced which, in such a season as that past, react against the success of the goods. Chief of these is the high gloss or sheen of the rayon which has proved undesirable in woolens and worsteds. Another objection is the practical one that where much rayon is brought to the surface it is likely to catch on any rough object and pull out or wear fuzzy. The practical woman turns away from a fabric with long floating threads on the surface. A particularly strong fashion mandate would be necessary to overcome this practical prejudice if wide usage is ever to be gained for such goods.

A difficulty which many goods of extreme fancy character meet is the unwillingness of distributors to stock them, and this condition has reacted against some of the otherwise worthy efforts to use rayon in wool dress goods during the last few months. Hand-to-mouth buying is an old story. The fact that retailers, and many big ones among them, will carry only about a two weeks' supply of goods, is also part of the history of recent seasons and still effective. Garment makers and jobbers find their business reduced to the greatest sort of speculation if they try to keep too far ahead of the retail trade, and although they realize that fancies have the power to make a volume business at the present time, they lack the courage of their convictions to buy ahead on fancies. Chiefly when the call is for staples will the distributor plunge into the market. For example the sale of bolivias and, to a lesser extent, poiret in the women's wear field during the last few months may be instanced. The buying of many desirable fancies has been let go until the last moment.



Group of Worsteds Showing Various Types of Rayon Introduction

Consider Purpose of Goods

In whatever way rayon may be used in women's wear, the purpose of the finished fabrics must be held in mind. Rayon cannot lift itself up by its own boot straps. It must be adapted and moulded to fit the purpose of the goods which carry it. Goods have been seen during the last six months which were better adapted in appearance to drapery and upholstery use than to women's wear. Such goods may have a limited use in the realm of sport wear, but with women's sport wear tending more toward the mannish in style, they are not enough in tune with the current demand to hope for much success. Among goods of this type might be mentioned those of rayon warp, wool filled with varicolored effects from fancy slub yarn in the filling. Effects such as these may be timely in some future season, but they do not appear suited to demand at present.

In the passing of bordered goods, rayon effects lost a strong ally. The use of rayon decorations along one side of the piece, had a brief popularity which faded naturally as the interest in bordered goods faded. During this vogue many yards of previously plain goods were moved by the simple expedient of having machine embroidered rayon decoration run down one side. The goods found their way quickly to the bargain counter and to the retailer of $5 and $10 dresses and the backbone of the bordered goods vogue was broken. The circumstances had little to do with the fact that it was rayon that was used for the decoration.

Subtle Use Is Keynote

Under the current style trends, rayon must be used subtly in the women's wear field to be successful. Manufacturers who do not know how to use it without flamboyancy should be the subjects of an educative campaign by those who have the best interests of rayon in the women's wear field at heart. At this particular time the most salable effects are gained by subordinating rayon's sheen, and that is probably the best single piece of advice which could be given to the rayon user in the women's wear field. In some other season the elements of sparkle and gloss may be much sought for, and then the use of rayon will probably proceed on a greater poundage basis in the women's wear field.

In the meantime there are certain definite elements of attractiveness

which may be added to dress goods and coatings by using rayon, largely in mixtures and twists. Manufacturers who have watched the trend during the last few months already realize that the mere presence of a new material with which they may work is not the basis for a revolutionary style change. Rather will style follow its own mysterious course, and the mills successful with rayon will be those which adapt it to the type of fabric and finish approved by fashion's mandate. Those who know it only as a sparkling, almost glossy, intrusion in a piece of wool goods, know only half the story, and it is not the half which is meeting greatest success at the present time.

In the mixtures and twists referred to above rayon is appearing in worsteds to give a two tone or two color effect in a piece dye. The wool dyes do not as a rule take on rayon, nor the rayon dyes on wool, consequently the entire field of cross dyeing is open to the manufacturers who are working with a rayon-wool mixture. Rayon is being used in coverts with success, for not only does it supply the white flecks in the ground work of this material, but it gives a life to the fabric and a bloom to the surface which is attractive and characteristic. Vigoreaux effects are also possible with rayon mixtures. In fact the entire realm of mixture effects is opened to the mill set up for only the piece dye finish, which would be impossible for that mill if it worked only with wool. Rayon permits flexibility in character of product with a minimum change in machinery or in some instances no change in machinery at all.

The utilization of rayon as a pure decoration is not wholly out of place this season, but it is being used with great restraint. Denier rayon yarn may be used to carry lines of color in pattern work with piece dyes or other sorts of goods. It is being so used in a number of lines shown for spring which are regarded as successful numbers, though perhaps not the numbers on which bulk business will be done. Reps are found which use rayon twist to advantage and in most of the so-called balbriggan fabrics which were popular not so long ago rayon had an essential place. In plain poirets, flannels and crepes the appearance of rayon is the exception.

As a pile in pile fabrics, or for the face in brushed goods, rayon is finding a place the permanency of which rests on the care exercised in adapting it for this purpose. The avoidance of too much gloss on the surface of the goods and the recognition of the fact that such fabrics will show the effects of crushing more easily than some other materials, must be given due regard in the adaptation of such goods for market. Many bolivias have been successfully made by use of a mixed rayon waste and wool face, the combination giving a textural effect similar to that obtained with the more expensive lustrous wools.

To make further progress with rayon in its more prominent and obvious uses in dress goods, work must be done to put the distributor in the frame of mind to carry and promote such goods. Examination of the woolen and worsted piece goods departments of several leading New York department stores failed to disclose any fabrics showing rayon in prominence except on the remnant counters. There were present, however, a number of mixtures which involve rayon to give life and color without appearing to the consumer to be other than all wool. Similarly in ready-made dresses the same facts hold. The forthcoming season will not be much different unless stylers show a little more inspiration and originality, and distributors a little more willingness to experiment and to assume leadership rather than follow previously beaten paths. Consumers' taste must be given due weight and developments must line up in a general way with current fashion. Within these boundaries however there is a vast amount of untrod territory which is going to be opened up some day and the successful explorer should reap good profits for his labors.

Tropicals Feature Rayon

In the men's wear field the use of rayon in woolens and worsteds has during the last two seasons fallen into rather narrow limitations. The best field is in tropicals, and these are chiefly of the mohair and cotton varieties. The use of a decorative yarn in men's wear fabrics is limited at its maximum and the cost of the silk for a silk decorated worsted is said, even by the selling agents, to be comparatively small per yard. The possible saving through the substitution of rayon would therefore be a small partion of an already small amount, and consequently the incentive to use rayon is negligible in any of the more expensive fabrics. Selling agents have found that clothiers prefer the silk decorated fabric to one containing rayon in the medium and better grade goods.

In the cheaper sorts of men's wear, however, where decoration had been used at all prior to the advent of rayon, it was mercerized cotton. In this part of the field the use of rayon has taken root and grown. Even though the cost may be greater than that of the mercerized yarn, users have found that the added brilliance to the cheaper tropical fabrics gained through the use of rayon has made the change well worth while. Nearly all of the better known cloths sold under branded names have introduced rayon in their tropical fancies. At first considerable experimentation had to be undertaken to allow for shrinkage, etc., as a fabric containing cotton, mohair or wool, and rayon is likely to play some tricks in shrinking, if proper allowance is not made with yarn tensions on the loom. The fabrics are now wholly successful and one of the features in the fancy division of the market for tropicals.

If the trend is toward brighter and livelier men's wear fabrics as seasons pass, there will be an expanding utility for rayon in the cheaper fabrics. It is the best fiber so far brought to the men's wear manufacturer's attention for adding brilliance and color and for enhancing the effects possible through the piece dye process. Use of the acetate rayon, which has its own peculiarities so far as dye is concerned, in conjunction with any of the other sorts of rayon and wool gives the opportunity for three color work with piece dyes, and this has been used in a number of instances to multiply the possibilities of fancies out of a piece dye mill.

Rayon Making Headway in Cotton Goods

Use in Upholstery Fabrics a Feature—Problems in Manufacture Being Overcome—Trade Becoming Increasingly Aware That Rayon Has a Permanent Place as an Adjunct in Cotton Goods Production—Much Still Depends Upon Experimentation

By H. Edwards Fayes

RAYON is fast becoming an important factor in the manufacture of textiles. This artificial fiber is a most fraternal yarn, for it not only combines well with all the natural yarns, but when artistically employed adds materially to their style value. Perhaps in no field is this better exemplified than in the cotton goods lines, where it has been brought into more general use than could have been anticipated a few years ago.

Difficulties of manufacture have been largely overcome, and are said now to lie chiefly in the dye house. Yet even here the troubles are fast vanishing, and one expert recently said that the waste from this source had been so reduced during the last years that it is now a negligible quantity. However, when there are difficulties the service departments of the leading producers of the yarn are always ready and willing to send an expert to the spot to help solve the problem. Today these calls for help come chiefly from concerns who have recently introduced rayon yarns into their mills.

With silk manufacturers having so recently had such a severe lesson on the results of over-production, it seems quite likely that cotton and rayon mixtures will enjoy a good season the coming year. There is a general sentiment throughout all lines of manufacture, even unto the garment trade, that more rational selling methods shall be brought into being. The better class of retailers would be by no means adverse to this since it would mean the elimination, to some extent, of unscrupulous competition in their own field.

The fact that few if any silk manufacturers made any profit to speak of during the first six months of the year, and that some even had most of their profit of the former season practically wiped out in the first three months of 1926, has given them a considerable bit to think about. Add to this the fact that a local retailer increased his silk yardage sales three times in the first six months over his business for the same period in 1925, yet his dollar increase was nil—and one is not surprised that the general sentiment is in favor of some innovation in methods of doing business. For the conclusion may surely be drawn that the silk business is not the only sufferer.

Price Declines a Factor

Rayon and cotton fabrics shared with others the general cut in price which took place because of unpropitious weather conditions throughout the spring. Therefore there are occasional buyers to be found who are much disgruntled, and because there is no use in damning the weather take it out on the fabrics on which they had to cut their prices in order to meet competition of the buyer who was not so well stocked as he. However, such buyers are in a decided minority. Some buyers of conservative tendencies seem not to be favorably impressed with any kind of rayon goods. Ask them what they think of rayon, and they simply look wise and say nothing.

To one who has only recently returned to the textile field, after several years' residence in foreign parts, this lack of appreciation of rayon and its possibilities comes as something of a shock. A longtime friend who is now the merchandise manager for piece goods for several important out-of-town retailers, was recently discussing the various market conditions, and when asked his opinion of rayon and cotton mixtures, replied with a negative shake of the head, and then said: "What do you think of them?" "What do I think of them?" I replied "why they are my great enthusiasm. I see

an excellent future for them if manufacturers do not lose their heads, and stylists do not go crazy over queer designs as so many manufacturers of printed silks and cottons have done."

The third class of buyers comprise those men who can give some constructive criticism to the subject. "I have learned one thing which is going to be useful to me when making further selections of rayon and cotton goods, and I have learned it from our women customers," said one retailer. "They do not like the extremely shiny surface that is a characteristic of some goods. Therefore, I shall take special care to eliminate them from future orders so far as possible. Also, our customers do not care for large designs and conspicuous combinations of color, so I am glad to hear that more elegant and refined designs will be a feature of the spring lines."

On the other hand there are women who seemingly admire the loud and flashy colorings and designs. These are they who frequent the popular priced stores, where in numerous anniversary sales such goods have been conspicuous in both ready-to-wear and yardage goods during September, and have been eagerly bought. The underlying reason for that taste is not far to seek, for the majority of these women are of foreign origin, who are able today to dress as they or their parents never dreamed of dressing in the old countries. Today their loud, shrieking voices vie with their garments of the same ilk for the attention of the crowd.

In another high class store, a considerable portion of the cotton goods department is given over to rayon and celanese fabrics. Here the display is impressive because of its infinite variety which ranges from the sheer voiles to the heavier ratines decorated with contrasting colored stripes. All are moving well, so naturally the buyer is an enthusiast. Credit must be given him for having selected his stock with rare discretion and taste. One of his newest and most beautiful fabrics is a shaded celanese voile in tones well adapted to the mid-winter dance frock. Another is a celanese moire shown in a good range of desirable street and evening shades, and priced at $4.50 a yard. This moire is said to have all the draping qualities of its silk sister. The head of this department said that rayon goods were selling on their own value, and that throughout the year the only time that found sales lagging was during the summer when the price of washable silks went away below par.

The cotton and rayon goods and the all-cotton goods being shown in this department have been selected in styles suitable for the construction of women's as well as children's frocks. The distinction between the two is largely a matter of size in the design. Small printed or woven effects are shown for children's wear, while slightly larger designs, particularly neat check effects, are especially notable in women's wear.

Use in Upholstery Goods

In upholstery goods rayon is making great headway. The most popular form in this field is the bedspread which is obtainable in the dependable stores at prices ranging from $3.95 to $13.50. The higher priced spread is in solid color brocaded effect; others have ruffled edges and bandings. Rose, blue, orchid and green are the colors which are generally favored for such spreads. They are all good colors for a bedroom, and therefore it is not surprising to find that rayon curtain materials of all kinds and prices are featured in most departments in similar colors.

In upholstery fabrics suitable for more formal rooms are rayon damasks which are now engaging the attention of interior decorators as well as the individual customer. Rayon taffeta, a combination of silk and rayon, has recently made its debut in the retail trade and is shown in stripes and solid colors. The tissue gauzes for sash curtains is a well tried favorite. Jobbers who cater to the interior decorators state that rayon fabrics have already made a place for themselves and they are firm believers in their increasing use for such purposes.

The only line into which they seem not to have been introduced is couch covers. There should be a good place for such articles provided they are styled in colors and designs suitable for the living room.

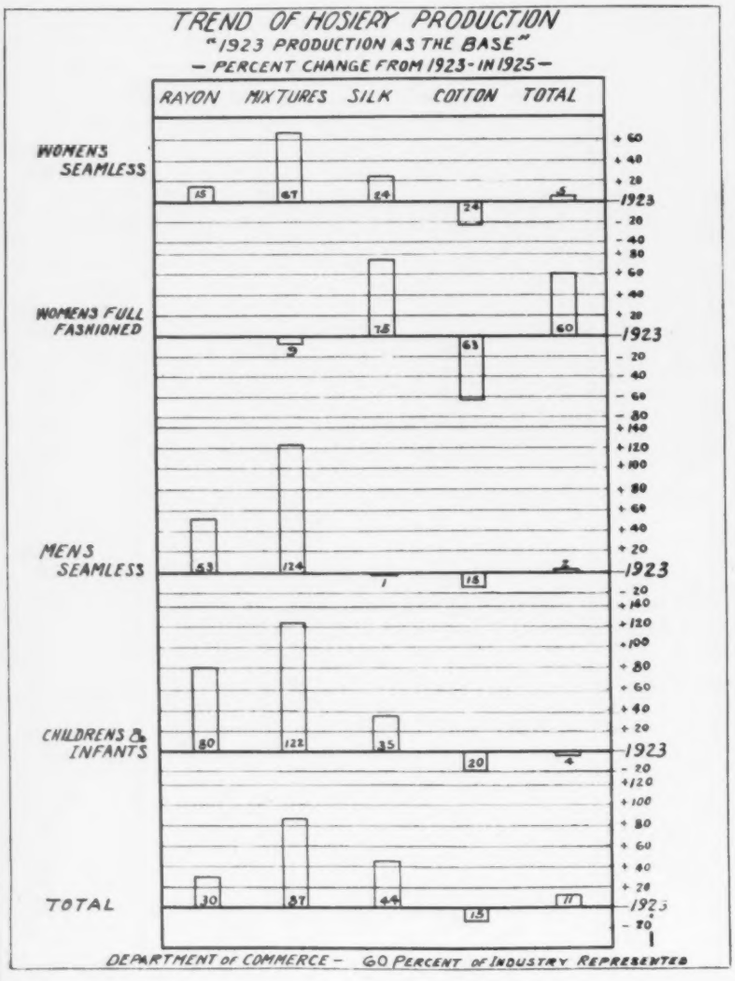
Rayon is here and it is here to stay. When properly and correctly used, it is a desirable adjunct to cotton goods, giving them tone and life and adding to their style value. But that it will ultimately oust to any considerable extent worthy all-cotton fabrics is too much to say. It has a place, a valuable place, and that is betwixt and between the all-cotton and the silk fabric. The great strides which have been made by American textile manufacturers in the employment of rayon in the last five years is a most interesting study, but that they still have something to learn cannot be gainsaid.

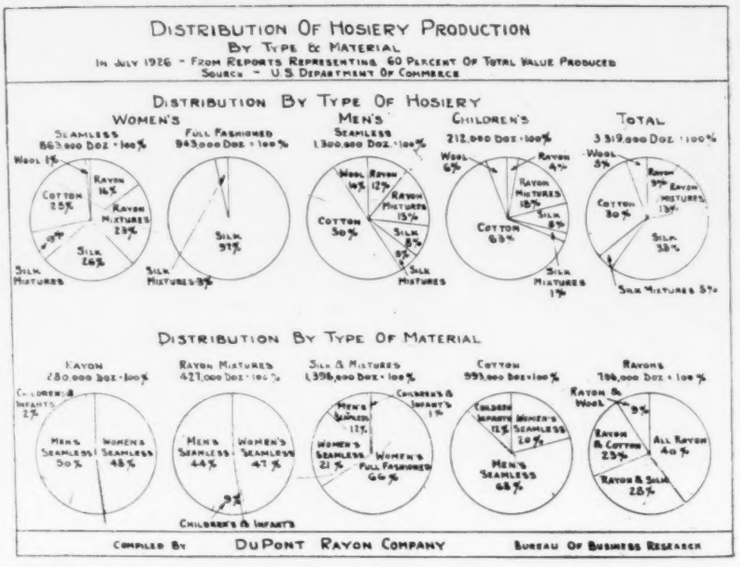
Data on Use of Rayon in Hosiery

AMONG the statistical studies undertaken by the Bureau of Business Research of the Du Pont Rayon Co., Buffalo, N. Y., is one on the use of rayon in hosiery manufacture. The accompanying charts show a portion of the results of this work.

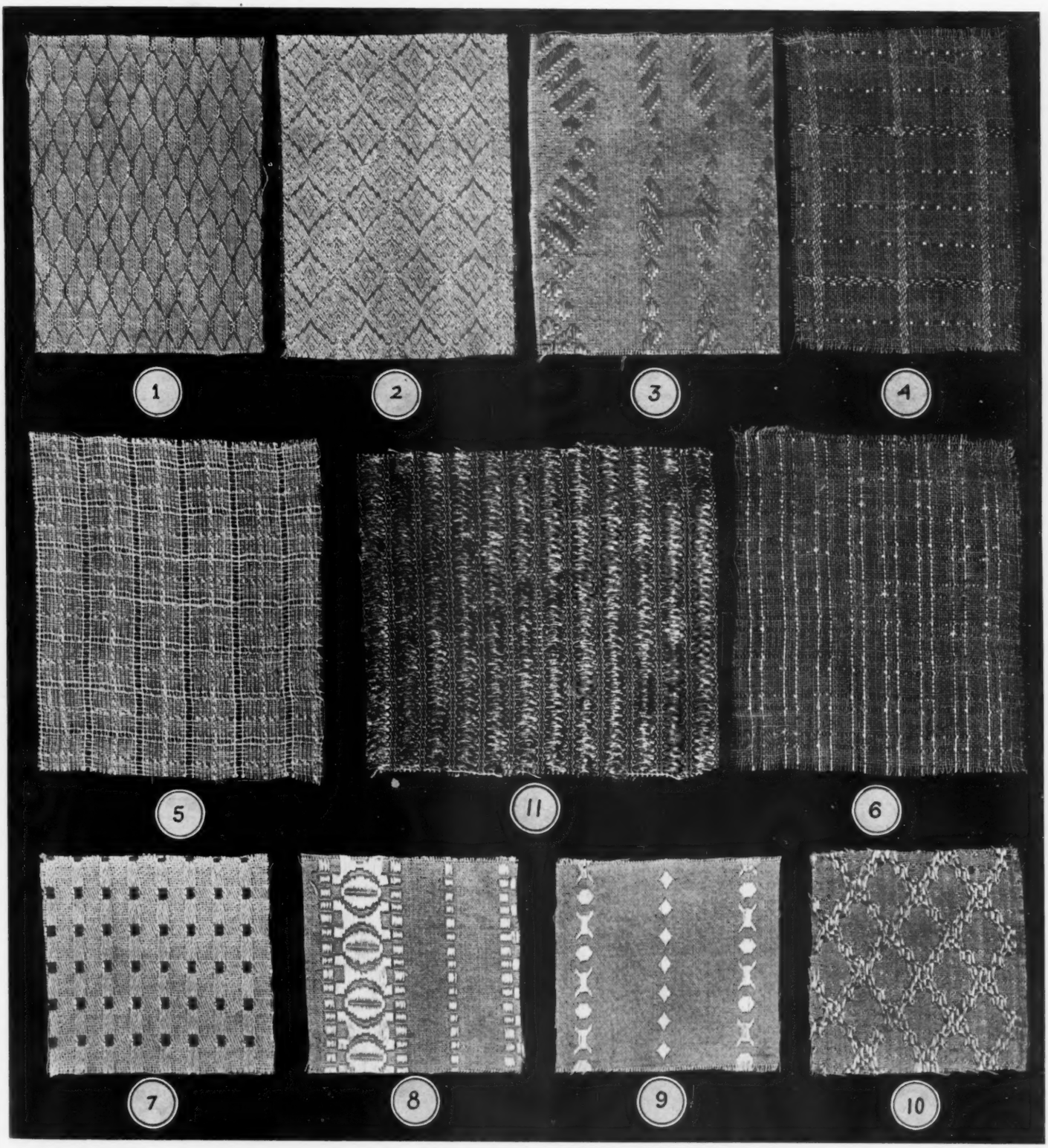
The right-hand chart, entitled "Distribution of Hosiery Production by Type and Material," is based on figures published for the first time by the U. S. Department of Commerce. Through cooperation with that department and with a number of hosiery manufacturers, the Du Pont Rayon Co. succeeded in having separate figures given for different kinds of rayon mixtures. Possibly the most interesting fact to be derived from the chart is that rayon hosiery, in a representative group, shows a proportion of 40% all-rayon as against 60% rayon mixtures. It is also interesting to note that, while silk goes mostly into full fashioned hosiery, rayon and rayon mixtures supply 39% of women's seamless hosiery and 22% of all kinds of hosiery.

The left-hand chart, entitled "Trend of Hosiery Production" shows the development in the use of individual fibers in hosiery from 1923 to 1925. It will be noted particularly that mixtures, in which rayon naturally played a very large part, had a tremendous impetus in those two years. The chart also shows the gains made in the use of rayon alone in all classes of hosiery with, of course, the exception of full fashioned.





Interesting Cotton-Rayon Mixture Designs



(1) Rayon Filled Broadcloth for Shirts; 128 x 68, 40s Cotton Warp and 150 Denier Rayon Filling. (2) Another Rayon Filled Broadcloth for Shirts; 144 x 76, 50s Cotton Warp and 150 Denier Rayon Filling. (3) Brassiere Cloth; 88 x 68, 30s Cotton and 150 Denier Rayon Warp, 18s Cotton Filling. (4) Voile for Light Drapery and Dress Purposes; 60 x 56, 50s Hard Twisted Cotton and 150 Denier Rayon Warp, 50s Hard Twisted Cotton and 150 Denier Rayon Filling. (5) Leno and Rayon Check for Drapery and Underwear Purposes; 60 x 60, 50s Cotton and 150 Denier Rayon Warp, 50s Cotton and 150 Denier Rayon Filling. (6) Cotton Voile and Rayon Check for Drapery and Dress Purposes; 60 x 52, 50s Hard Twisted Cotton and 150 Denier Rayon Warp, 50s Hard Twisted Cotton and 150 Denier Rayon Filling. (7) Sateen Check with Rayon Filling Figure for Brassieres; 124 x 68, 30s Cotton Warp, 18s Cotton and 300 Denier Rayon Filling. (8) Brassiere Cloth; 88 x 60, 30s Cotton and 300 Denier Rayon Warp, 18s Cotton Filling. (9) Brassiere Cloth; 88 x 68, 30s Cotton and 300 Denier Rayon Warp, 18s Cotton Filling. (10) Fancy Figured Cotton and Rayon Brassiere Cloth; 110 x 68, 30s Cotton and 150 Denier Rayon Warp, 18s Cotton and 300 Denier Rayon Filling. (11) Corduroy Weave on Marquisette Ground, the Rayon Filling to be Cut as in Corduroy Fabrics, for Dress Purposes, Also for Drapery; 48 x 88, 2/80s Cotton Warp, 2/60s Cotton and 300 Denier Colored Rayon Filling.

SECTION III—TECHNICAL ARTICLES

Processing Cotton-Rayon Piece Goods

Important Precautions to be Observed by Dyer and Finisher in Handling Cotton Fabrics with Rayon Yarns as Decorations—Scouring and Bleaching—Drying at Low Temperatures—Mercerizing—Dyeing Various Rayons and Combinations—Finishing to Preserve Luster

By Winn W. Chase

ONE of the large uses of rayon is as a decorative fiber in conjunction with cotton. In 1923, about 11% of the total domestic production of rayon was taken by the cotton goods manufacturers, while last year the figure jumped to 26%, or approximately fourteen million pounds. Owing to this rapid increase in the manufacture and use of cotton piece goods containing rayon effects the processing of these fabrics has attained a position of interest and importance.

Some of the fabrics in which rayon is used are voiles, lawns, pongees, organdies, broadcloths, sateens, brassiere cloth, marquisettes, crepes, jersey cloth, etc. The rayon may be combined with the cotton as a stripe or check or, as in the case of marquisettes and crepes, the fabrics may have a cotton warp and rayon filling. Jacquard patterns, likewise, are often woven of rayon.

Cotton-rayon fabrics are sometimes woven from skein-dyed yarn, but more often are manufactured in the gray. Fabrics of this latter class may be dyed in solid shades or two-tone effects, and, in fact, by combining two different types of rayon with cotton, three-color effects can be produced by the dyer.

The properties of rayon are such that it is necessary for the dyer and finisher to take certain precautions in order to avoid damaged fabrics and to insure satisfactory results. Before giving any detailed description of the methods of processing cotton-rayon mixtures it is well, therefore, to consider the most important precautions to be observed in handling this material.

The first essential is a careful inspection of the gray goods to determine whether any of the threads are frayed or broken, and whether the goods contain tight rayon. Owing to the lack of elasticity of rayon, it is almost impossible to process goods having this last defect. Five different types of rayon are produced commercially, all having different dyeing properties. The next step, therefore, is to examine the rayon threads to determine what type or types have been used.

A notable defect of rayon is its weakness; the dry fibers have only from 60 to 80% the tensile strength of cotton, and when wet lose from one-third to two-thirds of their original strength, depending upon the type of fiber. This defect combined with the lack of elasticity, low resistance to friction, and the tendency to develop cracks and creases, makes it imperative to avoid rough edges on equipment and any great amount of tension in handling rayon effect goods, especially while in the wet state; otherwise the threads are liable to be frayed or broken by friction or tension.

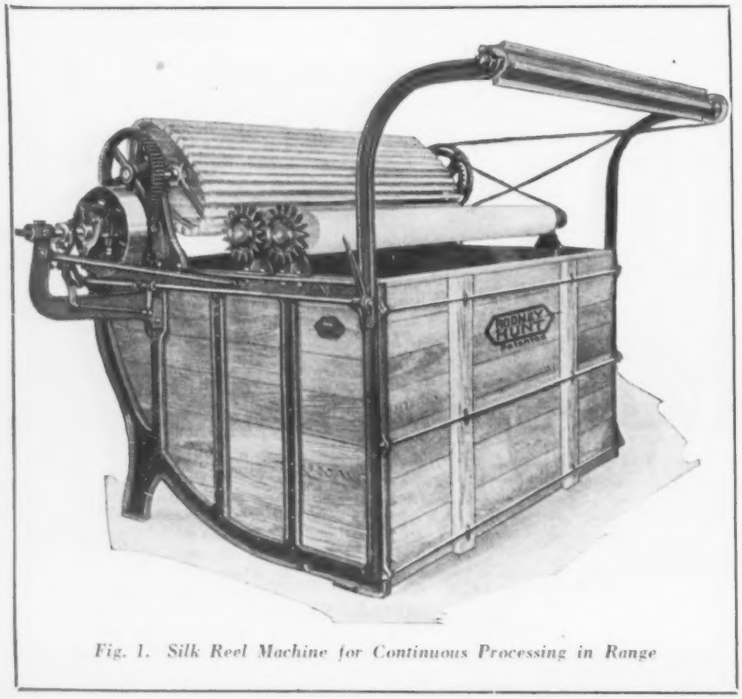


Fig. 1. Silk Reel Machine for Continuous Processing in Range

In the case of the cellulose acetates, and particularly celanese, excess alkalinity must be avoided in any treatment. Alkalies saponify this fiber, causing it to lose its property of cross-dyeing, and if saponification is carried still further, the celanese will lose in weight and strength and the luster will be destroyed. Extreme heat in the wet state also damages the luster of celanese and causes it to crinkle; for that reason, in treating goods containing this fiber the temperature of the various baths must be kept below 180 deg. F., and drying should be carried on at low temperatures.

Owing to the high affinity for dyestuffs of viscose and the other rayons of this type, the colors must be carefully selected for level dyeing properties. In finishing goods containing rayon care must be taken in the selection and application of softeners and sizes to avoid those materials which will cover the rayon and thus decrease the luster of the finished fabrics.

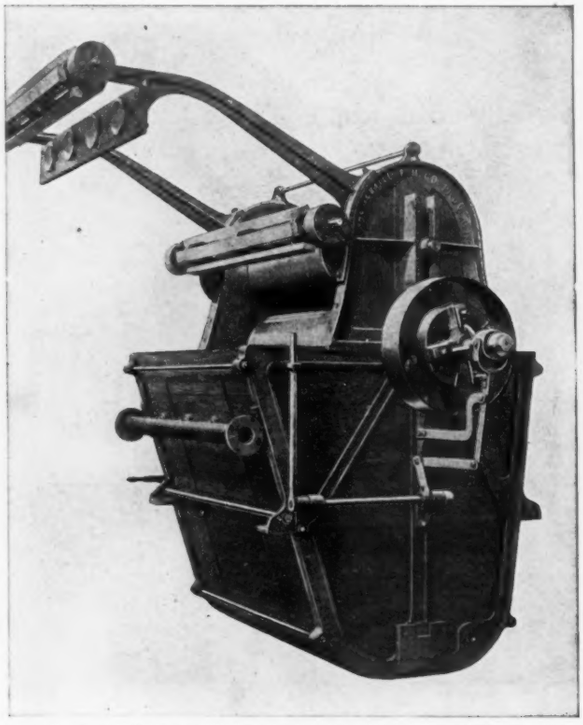


Fig. 2. Dolly Washer; Adapted for Scouring and Bleaching

Scouring and Bleaching

The methods used in scouring and bleaching cotton-rayon unions do not differ materially from those employed for all-cotton goods of similar constructions. Arrington states that some classes of goods having a firm construction may be boiled in pressure kiers using 2 to 3% of caustic soda on the weight of the cloth; the fabric is then washed, soured, rinsed, bleached with sodium hypochlorite, piled in bins, again washed, antichlored, and piled in white bins.

Many bleachers, however, prefer a slack washer, such as a dolly washer

for the scouring and bleaching of cotton-rayon mixtures. This type of equipment, if properly constructed, may be employed for practically all classes of work. Fig. 1 shows the latest type Rodney Hunt silk reel machine for scouring and bleaching cotton-rayon fabrics. This particular machine is usually employed for continuous processing in range and is generally grouped in ranges of from 3 to 8 machines, each one delivering to the next in line. This arrangement makes it possible to scour, bleach, and dye continuously, thus obtaining a high production. Where production is comparatively small, many mills have found it advantageous to install batch machines. In this case the goods are run into the machine in endless rope form, and the scouring, bleaching, and other operations are carried out without removing the goods between operations.

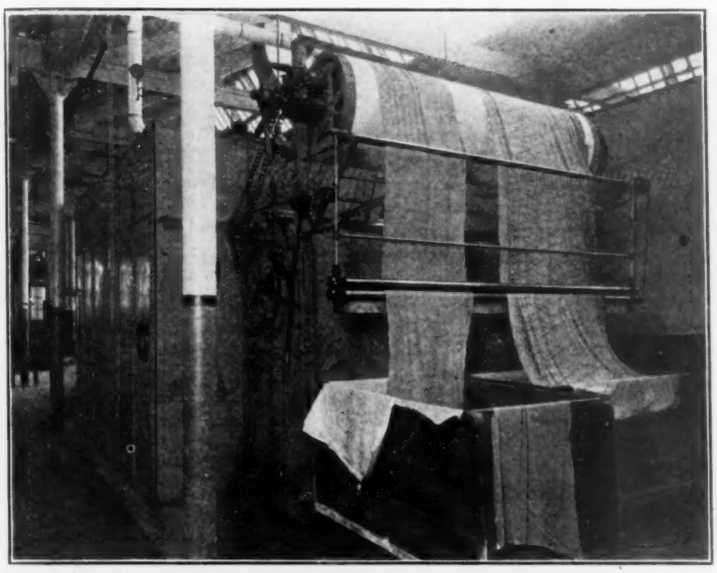


Fig. 3. Drying Machine for Cotton-Rayon Unions

The following procedure may be used for scouring and bleaching by the batch method: If necessary, the cloth is singed over a 4-burner singer, then routed directly into the reel machine and treated for 30 to 40 min. with diastafor or a similar compound. The amount of diastase will vary according to the strength of the product, 1% or less on the weight of the fabric usually being sufficient to convert the starches into soluble dextrines. When conversion is complete the goods are washed for 15 to 20 min. in hot water and then scoured and bleached.

For fabrics containing viscose and other regenerated celluloses, the following treatment is recommended:

(1) Work for 1 to 2 hrs. at 180 to 210 deg. F. in a bath containing 5 lbs. chip soap, 5 lbs. turkey red oil, and 1 lb. soda ash to 100 gals. of water.

(2) Wash 15 min. with hot water.

(3) Rinse 15 min. with cold water.

(4) Chemic until clear, usually about 1 to 2 hrs. at 65 to 70 deg. F. with sodium hypochlorite at 2 to 3 deg. Tw.

(5) Wash 15 min. with cold water.

(6) Treat 20 to 30 min. with ½ deg. Tw. muriatic acid at 60 to 70 deg. F.

(7) Wash 30 min. with cold water.

(8) Antichlor 15 min. with 1 lb. per 100 gals. of sodium bisulphite.

(9) Wash 15 to 20 min. with cold water.

The quantity of goods that can be treated in this way at one time depends upon the weight and construction of the cloth and will vary from 1200 to 2500 yds.

In treating fabrics containing celanese, the scouring should be conducted at a temperature not exceeding 175 deg. F., and the soda ash should be omitted from the bath. If necessary, a small amount of ammonia may be added to the scouring liquors. For bleaching, a neutral hypochlorite should be used.

Fabrics containing lustron may be processed in a similar manner to celanese unions. Lustron is not as sensitive to the action of alkalies as celanese, however, and the manufacturers of this fiber state that as much as 1% of soda ash on the weight of the goods may be employed without deleterious effect. In souring lustron the use of mineral acids should be avoided, acetic acid being recommended. The final wet treatment of lustron should be in a weak bath of sodium bicarbonate.

Bleaching with Peroxide

Some classes of cotton-rayon fabrics may be bleached advantageously by the peroxide method. The chief advantages claimed for the peroxide bleach are: (1) Simplicity; (2) Saving of time; (3) Quality of bleach; (4) Inexpensiveness.

When bleaching cotton-rayon mixtures with peroxide, kier boiling is seldom necessary; often a preliminary scouring may be dispensed with, and souring is seldom needed. This reduces to a minimum the amount of handling of the fabric, thus lessening the danger of damaging the cloth while in the wet state. While the time required will vary according to the type of equipment and the construction of the material, heavy goods can usually be bleached over night, while lighter fabrics can be bleached in five or six hours. Despite the fact that bleaching with peroxide is as a rule conducted at a temperature not over 180 deg. F., a permanent white is obtained which is often superior to that produced by the sodium hypochlorite method. It is said by Ainslee that while the chemicals employed in the peroxide bleach are more expensive than those used in the chemic bleach, due to the saving in time, labor, and equipment made possible by the former method, the total cost is in many cases little or no higher.

Hydrogen peroxide may be purchased in solutions of various strengths, or it may be prepared from sodium peroxide in the following manner: (1) Add slowly 3 gals. of vitriol to 70 gals. of water. (2) Cool with 200 lbs. of ice. (3) Add slowly with constant stirring 30 lbs. of sodium peroxide. This will yield 100 gals. of hydrogen peroxide at a strength of approximately 6 volumes.

For bleaching, the peroxide is diluted to a strength of about 2 volumes, the bath made slightly alkaline with sodium silicate, and the temperature raised to 175 to 180 deg. F. The fabric, which if necessary has been scoured previously, is entered into the peroxide bath and the bleaching continued until all motes have disappeared and a satisfactory shade has been obtained (usually 3 to 6 hrs.). After bleaching, the goods are washed with warm water, thus completing the process.

The dolly washer manufactured by the Textile-Finishing Machinery Co. and illustrated at Fig. 2, is adapted for scouring and bleaching cotton-rayon fabrics by either the peroxide or hypochlorite method.

Drying Fabrics

After bleaching, the goods are usually opened on scutchers, lightly mangled, and dried, although in some cases they may be dyed without drying. High temperatures in drying should be avoided, especially with the cellulose acetate rayons. The type of drying machinery is selected according to the class of goods. Heavy fabrics such as broadcloths and pongees may be dried on revolving cans, providing that in the case of celanese and lustron the first few cylinders are lapped. Marquisettes, voiles, organdies, and similar goods are often dried by circulating warm air in cell dryers. Crepes and other delicate fabrics which must be subjected to as little tension as possible are dryed in apron dryers heated with steam coils or with a current of warm air.

Fig. 3 shows the latest type Proctor & Schwartz drying machine for cotton-rayon unions in a wide range of weights. The outstanding features of this dryer are its high capacity, low steam consumption, and small space needed for installation.

Mercerizing

Shirtings and certain other classes of rayon-effect fabrics frequently require mercerizing. Dr. Jones of the Arnold Print Works has protected several methods of mercerizing cotton piece goods containing viscose by the addition of alcohols and similar compounds to the caustic soda. Many finishers, however, are mercerizing this class of fabrics successfully with no other precautions than to carefully regulate the strength and temperature of the alkali solution, to wash at low temperatures, and to sour the goods immediately after they leave the mercerizing range.

It is said that piece goods containing lustron may be mercerized if the concentration of the caustic is kept below 15%, the temperature below 40 deg. F., and the goods washed quickly with cold water and then soured with acetic acid. Until recently, there was no generally known method for mercerizing fabrics containing celanese. Recently, however, patents have been granted covering the use of protective agents for celanese in the mercerizing liquor, and Marshall in E. P. No. 210,484, has protected a method whereby cotton may be mercerized in the presence of cellulose acetate by using concentrated solutions of sodium hydroxide at temperatures below 60 deg. F.

Dyeing Various Combinations

The dyeing of cotton-rayon piece

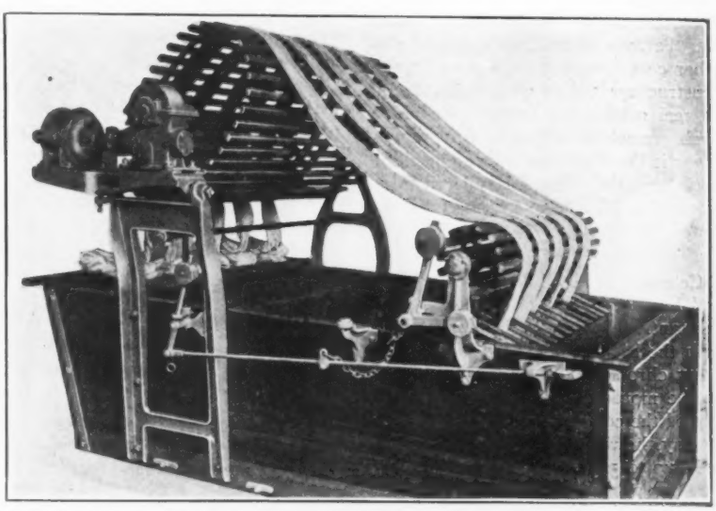


Fig. 4. Single Reel Rope Dyeing Machine

goods may be considered under four heads, namely:

1. Cotton with viscose or other hydrated cellulose effects.
2. Cotton-celanese goods.
3. Cotton with lustron effects.
4. Three-fiber fabrics such as cotton, viscose, and celanese.

Viscose, cuprammonium, and nitrocellulose fibers are similar in chemical constitution but differ to some extent in their dyeing properties. In particular, nitrocellulose rayon has less affinity for substantive colors and more for basic colors than has viscose, while the cuprammonium type has a greater affinity for the substantative dyes and less affinity for the basics than either of the other two forms. In dyeing cotton fabrics containing hydrated cellulose threads, it is important, therefore, to know what particular type of rayon is present in order to make the necessary changes in formulas and manipulation. In general, however, the three varieties may be classed as similar fibers.

Dyeing Cotton-Viscose Effects

Cotton-viscose fabrics may be dyed with direct, developed, basic, napthol, sulphur, or vat colors. Space limitations prevent detailed discussion in this article of the methods employed with these colors but a future article in TEXTILE WORLD will go into this subject. The principal machines used in the application of dyestuffs to these fabrics are padders, jigs, continuous machines, and reel machines.

The padder is used chiefly for producing light and medium shades on fabrics that have no particular fastness requirements for washing or laundering. Voiles, organdies, marquisettes, lawns, pongees, and similar cotton-viscose mixtures are dyed with direct colors in solid shades. No special precautions need be taken in padder dyeing with direct colors other than to select dyes with good level dyeing properties and to regulate the temperature of the bath so that the two fibers will be dyed a uniform shade.

Jigs are largely used for dyeing cotton-viscose piece goods which are of firm enough construction to permit of their processing on these machines without injury to the cloth.

Direct, developed, and basic colors may be applied to crepes, voiles, and other cotton-viscose fabrics of fragile construction in the rope form in strand or reel machines. One type of rope dyeing machine which is growing in favor is the single reel dyeing machine made by the Van Vlaanderen Machine Co. This apparatus is illustrated at Fig. 4.

Dyeing Celanese

Celanese is a cellulose acetate fiber and has little affinity for most of the substantive colors, but may be dyed with the basics, some acid colors, and many chrome colors. This fiber cannot be mordanted with tannic acid or any of the common metallic mordants. It may, however, be partially saponified—up to 5% of its weight—when it loses its property of cross-dyeing and may then be dyed with the direct colors.

None of these methods are now in extensive use, having been superseded by the colors manufactured especially for dyeing cellulose acetate silk. Some of these special dyes are the Duranol, Dispersol, Ionamine, Azonine, Setacyl Direct Dyes, Cellit, Celatine and the S. R. A. colors. The S. R. A. colors are marketed by the manufacturers of celanese who have protected the use of them for dyeing celanese or fabrics containing this fiber. The other brands are sold without restriction and may be applied to either celanese or lustron. The application of these special dyes will be discussed in a later article to be printed in TEXTILE WORLD.

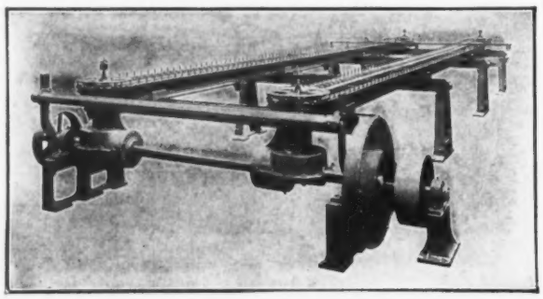


Fig. 5. Light-Running Tenter for Cotton-Rayon Fabrics

Celanese-Cotton Mixtures

Since most of the special dyes for celanese have little or no affinity for cotton, and as many of the direct, sulphur, and vat colors do not dye cellulose acetate, it is possible, therefore, to produce the following combinations on celanese-cotton unions: (1) Celanese dyed—cotton white; (2) Celanese white—cotton dyed; (3) Celanese and cotton solid shade; (4) Celanese and cotton contrasting shades.

Dyeing Luston-Cotton Fabrics

Lustron like celanese is a cellulose acetate and has the same general properties as the latter fiber. It has little or no affinity for most of the substantive colors, nor can it be mordanted with any of the common metallic mordants. Some variations, however, are seen between lustron and celanese, due probably to different methods of manufacture which influence the degree of acetylation. From the dyer's standpoint, the most important differences are: (1) Lustron is less sensitive to the action of hot liquors and may be boiled without injury to the fiber. (2) Lustron is less sensitive to the action of alkalies. (3) Lustron is less resistant to the action of acids. (4) The different affinity of lustron and celanese for certain dyestuffs makes it possible to cross-dye the two fibers.

Either jigs or reel machines are usually employed for dyeing lustron-cotton fabrics, the choice depending upon the construction of the cloth.

Dyeing Three-Fiber Fabrics

Three-fiber fabrics containing cotton, viscose, and cellulose acetate are usually dyed in contrasting shades. The celanese or lustron may first be dyed with either basic colors or with the special acetate colors and the cotton and viscose then dyed with direct colors, either in solid or two-tone effects, according to the manipulation. When fabrics containing viscose and a cellulose acetate fiber are dyed with basic colors, and the bath is started cold, the viscose will absorb much of the dye, but as the temperature is raised, the color transfers to the acetate, leaving the viscose practically white.

Drying and Finishing

After dyeing, the goods are dried either on cans, cell dryers, or apron dryers, and are then ready to be finished. In finishing cotton-rayon fabrics one of the chief points to be considered is the preservation of the luster. Large quantities of starch or oil are liable to coat the rayon effect, preventing the reflection of light and thus dimming the luster and brilliancy of the fabric. Whenever possible, therefore, finishing materials, such as certain gums and waxes which have transparent qualities, should be used in finishing this class of work. Blackshaw lists as suitable the following finishing materials: gelatine, gum tragasol, white dextrine, hana gum, Irish moss, and glycerine.

Recently, a so-called souple finish on rayon has attracted considerable attention. This souple finish is said to reduce the luster of rayon and give the fiber very much the appearance and handle of real silk. One of the best known methods for producing this souple finish is by treating the fabric in a cold bath of dilute lactic acid, followed by immersion in a cold bath containing about 3 to 4% of neutral olive oil soap; the goods are not rinsed between operations or before drying. Another method from German sources consists of passing the rayon several times through a lukewarm solution of sulphuric acid 3%, followed immediately by treating for 20 min. in a 3 to 5% solution of barium chloride at 150 deg. F. The latter method is said to increase the weight of the goods from 3 to 5%, and at the same time to give the material the appearance of weighted natural silk fabrics.

For calendering cotton-rayon goods which require this treatment, a 3-roll silk calender is recommended. After tentering or calendering, the fabrics are ready to be hooked off, inspected, and put up. The light-running tenter built by H. W. Butterworth & Sons Co., and shown at Fig. 5, is a new machine that is especially adapted for cotton-rayon fabrics.

Rayon Research Work

(*Continued from page 42*)

in the wave lengths or frequency of the cycles used. Light waves for the ordinary spectroscope range around 10^{-5} cm in length while those of the X-ray spectrograph range from 10^{-8} to 10^{-9}cm or from 1,000 to 10,000 times as short as those of the ordinary spectroscope and therefore it is capable of dealing with distances of the order of those between the particles in colloidal solutions.

The X-ray spectrographic method has already been used in investigations on the structure of cotton hairs and rayons and has furnished valuable information that should help in directing new investigations on rayons and their source materials.

The X-ray spectrographic method of determining structure may become so refined in time that we may heat treat rayons and examine the resulting structure with the X-ray spectrograph with results akin to those now obtained by the use of etching and the ordinary microscope in the case of heat treatment of steels.

The X-ray spectrograph method may some day find a place in a study of the orientation of particles or molecules at extended interfaces and may even extend to giving at least a clue to the structure of the net work of interfaces within the colloidal solution. This net work is probably not unlike that of soap foam and may be a very important factor to consider in future investigations.

The kino-ultra-microscope, which is an extension of the ultra-microscope method to produce a permanent record, should be considered in every study of a colloidal solution. It is in effect an ordinary ultra-microscope of the cardioid condenser type with a cinematograph attached to it and provided with a constant speed mechanism so that a series of pictures of known time interval may be taken. The intervals may be as small as one fiftieth second or as large as one second or even larger. Concerted effort should be given to applications of this instrument everywhere possible. It may prove to be a most powerful aid in the study of colloidal solutions of the nature of those used in the manufacture of rayons.

The centrifugal and sedimentary methods of studying size and distribution of particles should not be neglected as they can furnish very valuable information and are sometimes the only methods practical.

New knowledge that may be acquired by these and other methods of scientific investigation may be turned to account in pointing out the way to improvement in the strength, elasticity, water resistance, etc. of rayon but it should be done in a scientific way without reference to speed or cost of production and then placed in the hands of a competent chemical engineer, who has a good record of manufacturing experience, to determine the best manner of control for producing a uniform quality at as low cost as possible.

Rayon in Narrow Fabrics

Number of All-Rayon Products Is Steadily Increasing—Advice on Spooling, Warping and Weaving—Success Depends Largely Upon Cutting Down Friction and Undue Tension in Every Process Through Which the Material Must Pass

By M. E. Jameson

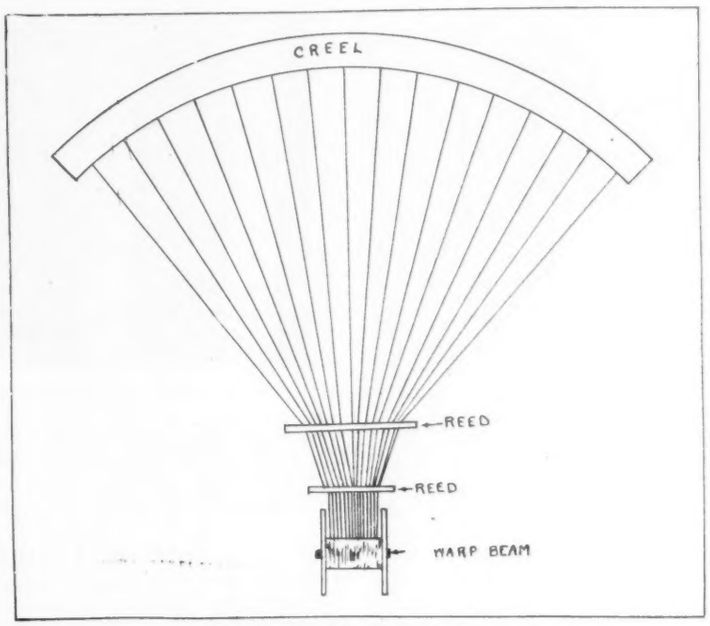
THE manufacture of ribbons and other narrow fabrics calls for large quantities of rayon yarns in the various sizes. Although most of the ribbons found on the market today are combination fabrics—that is, rayon warp and cotton, mercerized, tinsel, wool, worsted, or pure silk filling, or vice versa—the number of all-rayon fabrics is steadily increasing. This gradual increase is due partly to the improvement in the quality of the yarn on the part of the rayon manufacturer, and partly to the success of the experiments conducted by the narrow fabric concerns in an effort to overcome some of the difficulties they have encountered in the manufacture of rayon products. Many of the difficulties encountered have been due to the decided difference in the nature of the material from that which textile concerns had so long been familiar.

Variety of Products

The classes of rayon ribbons manufactured are of wide variety. There are the substantial ribbons of the plain or basic weaves, such as are used for bindings, edgings, strappings, etc.; there are the fancy weaves of solid white or somber gray for casket and coffin trimmings; and there are the various solid and mixed colors of both plain and fancy weaves, the uses of which are legion. A few of the products in which the use of rayon ribbons figure prominently include the following: Wearing apparel, from the innermost flimsy things of milady to the outermost, not forgetting hats, shoes, and gloves; furniture trimming, automobile upholstery, portieres, lamp shades, fancy belts, and neckties. The latest addition to the growing list is the gaudy-colored band for men's straw and felt hats.

Rayon usually comes to the narrow fabric manufacturer in skeins weighing about 2 oz., and measuring about 40 in. in circumference. Several of these skeins are rolled together, and the rolls thus formed are put up in uniform size packages of 10 lbs. each. The color is a clear creamy white, and the finish is exceedingly lustrous. If the yarn is to be used for filling in the natural color it is simply spooled and forwarded to the weaving department. If it is to be colored, of course it must first go to the dyehouse. If the yarn is to be used for warp, whether in the natural color or dyed, it is usually first sized or lubricated.

Details of these processes as used in the different mills are, as a rule, carefully guarded, as almost every concern has its own formula. However, starches, dextrines, or various oils are used as bases, the principal requirement being that the filaments be made to hold together, or lubricated so that they will offer less resistance, thus minimizing the danger of friction in the subsequent processes. It is important that the treatment shall not impair the natural sheen. Yarn that is to be used in ribbons that are dyed after weaving can be starched much heavier than yarn that is not to be used for piece-dyed goods, as this starch can be removed in the subsequent wetting-out process.

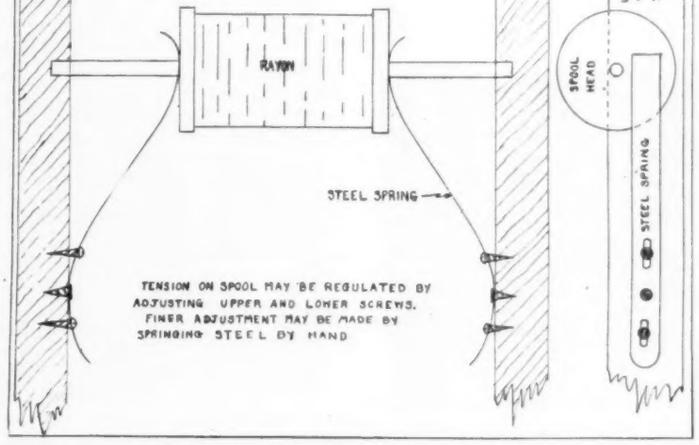


Circular Creel for Warping Rayon

Dyeing the Skeins

Rayon does not have to be boiled-off before dyeing as does cotton yarn or natural silk, but is simply wet-out in the box in which it is to be dyed. When wet, the yarn loses some of its strength and this is one of its drawbacks. It is in this condition that it is most susceptible to damage by friction. In an effort to minimize this friction, many concerns are using glass rods for hanging the yarn in the dye tubs. Much trouble is sometimes encountered in obtaining level dyes on some rayon yarns. It is pretty generally conceded, however, that this difficulty is sedom due to improper working but to some inherent quality in the yarn itself. Some of the largest rayon manufacturers in the country have recognized this difficulty and are now cooperating with the dyers in an attempt to overcome this problem.

One of the most successful methods of drying rayon yarn is by still drying; that is, hanging in the still air of a warm room or in the proximity of the regular dryers. The action of a fan is likely to tangle the skeins so as to render them impossible to spool without danger of breaking some of the filaments. Attention should be paid to the drying poles to see that they are as smooth as possible. A little sandpaper and shellac will work wonders on these poles. The skeins should be lifted along the poles, both when being hung and when being stripped; they should not be dragged or pushed along. In stripping, a few skeins are taken in the hand at a time and very slightly rolled, just enough to prevent tangling.


RAYON
STEEL SPRING
TENSION ON SPOOL MAY BE REGULATED BY ADJUSTING UPPER AND LOWER SCREWS. FINER ADJUSTMENT MAY BE MADE BY SPRINGING STEEL BY HAND
SPOOL HEAD
UPRIGHT WARPER SUPPORT
STEEL SPRING

Device for Controlling Tension in Warping

Spooling and Warping

The next step is spooling. The skeins should be shaken out carefully by hand, not on a cross-arm. They should be placed evenly on the swifts so that there will be no uneven drag. The tie bands should not be broken by hand but should be cut and carefully removed. Very light swift weights should be used as the least tension is apt to break a filament and every broken filament is a multiplied menace at the loom. The drive on the spool or bobbin should be light enough so that the least tension will stop the spool. Of course only very smooth porcelain guides should be used.

In warping, as little tension as possible should be placed upon the yarn. Sometimes a spring tension arrangement can be devised by the mill mechanic, and can be applied to the ends of the spool or bobbin. Such an arrangement is shown in an accompanying illustration. The amount of tension can be adjusted to any degree: first, by the temper, width, and thickness of the spring steel used; and second, by regulating to a nicety by bending with the hands. Further adjustment may be made by manipulating the upper and lower screws on the spring. The straighter the line that can be maintained from the spool to the warp the better. Of course all the ends cannot be drawn in a straight line, as the shape of the warp must necessarily be fan-like.

A circular creel, such as is shown in the illustration, can be used advantageously. The principal feature is that it eliminates at least two points of friction. First, it allows the yarn to be drawn straight from the spools instead of diagonally across the adjacent threads on the spool, as is the case on a straight-warper where the end in unwinding follows the traverse of the spooling machine from side to side. Second, it eliminates the eyelet

on the creel through which the end is usually drawn.

The lease rods and reeds should be selected with care; fine smooth lease rods, and reeds that are not too fine should be used. A good rule is to use the same dent reed at the warper that is to be used at the loom. If paddles must be used at the warper they should rest on the heads of the spools, not on the yarn. Warp beams that are free from rough edges or rust spots should be selected so as to insure an even let-off at the loom. It is advisable to slip two or three thicknesses of wrapping paper around the yarn on the beam at different points as the warp builds up, to prevent the ends, particularly at the edges, from cutting down into the warp. The paper should be the full width of the warp beam.

Friction at the Loom

There is one point on which there is no doubt; smooth heddles must be used if the best weaving results are to be obtained. Some heddles that are commonly used for cotton, wool, and worsted, present too many possible points of friction. Oval dent reeds are also an advantage, but should not be too fine. Flat dent reeds will not only chafe and cut the filaments, but with the constant backward and forward movement of the lay will bunch up the broken filaments, and they in turn will become entangled with the other ends and soon break out the warp. There seems to be much difference of opinion as to whether a back reed should be used. If not too fine, and if friction can be avoided, the back reed may be an advantage, but much depends on how the ends are reeded in. As in warping, as straight a line as possible should be maintained from the rollers at the back of the loom, through the back reed, lease rods, and heddles to the reed.

While lease rods of glass may sometimes be used with success at the looms, their large diameter presents such a great surface for possible friction that small steel rods are likely to prove superior. Sometimes it is an advantage to eliminate both the lease rods and the back reed. Smooth running rollers should be used on the beam levers, or let-off levers, and at the point where the warp goes over the back of the loom. The rollers should be of hard wood, sandpapered and shellacked to a glassy finish. If edge wires are used, they should be engaged with enough of the woven material to hold them taut. If they are allowed to dangle around, the rayon ends are in danger of coming in contact with them as the harnesses rise and fall.

Care should be taken not to crowd the ends in the heddles. It will be found better to use twice the number of harnesses, if the weave permits, and provide plenty of room for the free movement of the yarn. Judgment should be used in selecting the grade of sandpaper employed on the sand rolls. If too coarse, it is apt to fray the ribbon and give it a used appearance. On fine goods, coarse sandpaper may leave thin places, particularly in the case of all-rayon ribbons or ribbons composed of rayon warp and silk or glazed cotton filling, or vice versa. The reason for this is that the materials in both warp and filling are so smooth that either will slip along the other at the slightest provocation.

Preventing Wave in Ribbon

On loom blocks where a travel motion is used, care should be exercised that there is not too much tension on the blocks. Excess tension here is likely to produce a permanent wave in the ribbon, especially in fine goods, which is very difficult to remove. The amount of weight to be used on the warps will vary, of course, with the different textures, but excessive weight should be avoided here as in the warping and spooling.

In making the filling for the shuttles on a horizontal quiller, the tension should be placed upon the spool heads and not upon the yarn. With an upright quiller, some arrangement must be used to prevent the yarn from rubbing against the head of the spool as it unwinds.

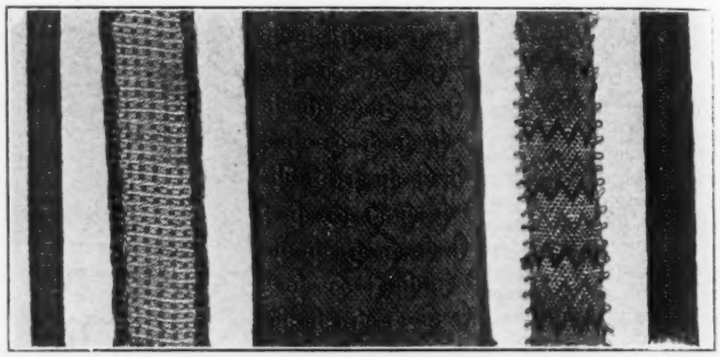
Importance of Humidity

In mills where the manufacture of rayon ribbons is an important item, the relative humidity enters as a serious problem. Tests recently presented by Charles F. Goldthwait in the August 14 issue of TEXTILE WORLD, seem to indicate that as the humidity increases there is a relative decrease of direct proportion in the strength of the rayon thread. Unless the humidity is controlled in the weaving department, the width of the webbing is apt to show great variation. With a constant degree of humidity it is quite possible to hold to any given width with a remarkable degree of accuracy.

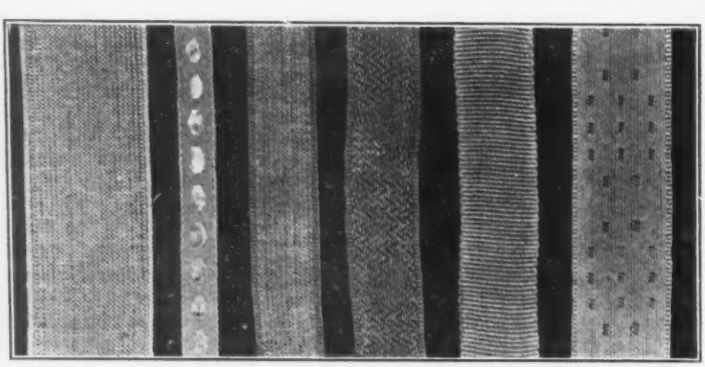
Rayon ribbon wrinkles very easily. If it has to be dyed after weaving, it is almost always necessary to run it through a wet-finishing machine to remove the wrinkles. Usually plain water is sufficient, but if not, a very light size may be added to the bath. Improper tension should be guarded against here as in the other operations, only enough tension being placed upon the ribbon to draw it into the receptacle at the back of the machine. On no account should wax or tallow be allowed to come in contact with the rayon in any of the operations, as the luster of the yarn is almost sure to be destroyed.

If the ribbon is to be wound into rolls, the flanges on the winding machines should be perfectly smooth. When the finished product is to be shipped any considerable distance, it is advisable to pack the rolls in boxes with a liberal amount of soft tissue paper around the sides to prevent chafing.

Summarizing the foregoing, the points to be stressed are the elimination of friction and undue tension in every process through which the rayon must pass, and the control of the humidity. These are the principal secrets of success in the manufacture of rayon ribbons of quality.



Rayon, Cotton and Tinsel Narrow Fabrics



Rayon and Cotton Ribbons for Various Purposes

Rayon Progress in Britain

(*Continued from page* 43)

allied. As a result of this Britain is now the leading consumer, per head, of rayon not excluding the United States, though in this latter case, the wide difference in circumstances renders a comparison impossible. It may be argued therefore that in this way Britain is nearer saturation point than any other country but it is scarcely possible to subscribe to this view unless one grants that all main uses for the fiber have been found and exploited. This latter idea is probably quite absurd and we may consider therefore that while in Europe, Britain is leading the way in the matter of rayon consumption, there is no reason to think that the limit is anywhere near being reached.

It would appear however that there is not likely to be an extraordinary home demand in the near future and that the business will only slowly extend during the next few months, and this is emphasized by the steady progress made by cotton manufacturers in Lancashire.

The recent all-British Artificial Silk Exhibition held in London and described in detail in TEXTILE WORLD some months ago, was an unexampled success and gave to the many visitors both from the provinces and from abroad an indication of the possibilities of the fiber as manufactured by British firms.

In discussing the future prospects of the rayon industry with leading manufacturers one gathers the impression that Britain, at least, has but little to fear. There is little doubt that in all branches of textile work, this country must inevitably concentrate more and more on high grade qualities and fancy and novel effects. As a consequence of this, cotton manufacturers will be compelled to turn to rayon and utilize it in increasing quantities.

The enormous control which the British rayon industry through Courtaulds, Ltd., holds in most parts of the world, and which has been strengthened by recent amalgamations with Germany, gives the country a large voice in the determination of world prices. The well-known adaptability of the native population, through years of inherited experience, renders the collection of a suitable staff a comparatively easy matter. Costs of production, while being at first sight higher than those of some continental countries, are on account of factors such as adaptability of operatives and better quality of output, not in reality uncompetitive.

The enormous financial strength of Courtaulds is sufficient to guarantee their safe survival from any storm however bad or prolonged. The fact that England's main markets are not those where the adoption of retaliatory tariffs are extremely likely is a factor sometimes lost sight of, yet in reality it has been abundantly proved already in the rayon history of Europe, that dependence upon exports to other producing countries is a very doubtful investment.

Oils and Oil Products in Rayon Processes

Necessity of Lubricants in Rayon Winding—What a Rayon Lubricant Should Do—Preparing Rayon for Winding—Removal of Oil and Foreign Matters—Dyeing Light Shades With a Dyebath Leveler—Softening Rayon Preparatory to Finishing

By Herbert C. Roberts

Chairman, Textile Research Department, E. F. Houghton & Co.

THE most important step in the conversion of rayon skeins into a finished fabric is the winding. It has been estimated that 90% of the trouble encountered in rayon processing today is directly traceable to poor winding. A necessary preliminary of winding is the proper lubrication, which is essential to keep the fibers 100% cylindrical at all times. It also gives rayon the necessary elasticity.

Functions of Lubricant

A rayon lubricant must act as a binder for the many filaments which compose the thread. Without a suitable binder, a broken filament will strip back on the yarn, showing up as a ball. The rayon yarn which has had its diameter reduced by broken and stripped filaments will show up as a light streak in the finished goods.

A rayon thread must be subjected to the least possible amount of friction in all of its preparatory processes. When rayon is pulled over a fixed surface or a sharp angular projection, its cylindrical shape is flattened and the filaments, which compose the threads, tend to separate where no lubricant is used. In this condition friction quickly wears and breaks the individual filaments. This condition in the completed fabric shows up as a hairy fuzz or nap.

A rayon lubricant is essential to soften the yarn so that it will flex and bend, giving even symmetrical loops in the case of knitting. Rayon which is not lubricated is stiff, wiry, and difficult to handle. The lubricant must permit a maximum speed of winding, which in turn will permit a rapid unwinding. This is a necessary requirement of warp preparation for weaving and in feeding to knitting machines. A perfectly lubricated rayon yarn will give an even tension, thereby preventing breakages which show up in the finished merchandise as knots and slubs.

A rayon lubricant encases the individual fiber filaments and the yarn as a whole, thus bearing the friction burden and reducing wear or friction on the filaments themselves. The lubricant itself must be a free flowing oil, even in winter months. It must be colorless, odorless, and stainless. It must always smell sweet. It must oil every inch of the fiber and yarn evenly. It must not dry out, but should stay in the yarn so that knitting or weaving can be perfectly accomplished several days after winding. The rayon lubricating oil must be easily and thoroughly removable and leave the goods receptive to dye.

Method of Application

Up to this point the essentials of a rayon lubricant have been discussed. Now comes the application of the lubricant. There are four methods of application of a rayon lubricant in use today.

Soaking Method. Soaking the rayon in a solution of the rayon lubricant is the most common and satisfactory method of application. It consists of plunging the rayon skeins in the solution, thoroughly wetting them out and then removing the excess by extracting in a hydro-extractor. The well wet out skeins are wrapped in a cheese cloth or thin muslin sheet and placed in the extractor cage, being whizzed until 10 to 15% of oil remains in the goods. The cloth prevents the yarn from being drawn through the perforations of the extractor cage.

Roller Trough Method. The roller trough method is quite largely used. It is illustrated at Fig. 1, and consists essentially of a trough placed between the skein on the swifts and the bottle bobbin. The trough contains the lubricating medium and a freely turning roller. The yarn is held in contact with the roller by porcelain guides. The contact causes the roller to revolve, which in turn, furnishes the lubricant to the yarn as it passes over the roller. By this method the yarn absorbs about 7% of its weight of oil. This method is applicable for certain types of rayon winding.

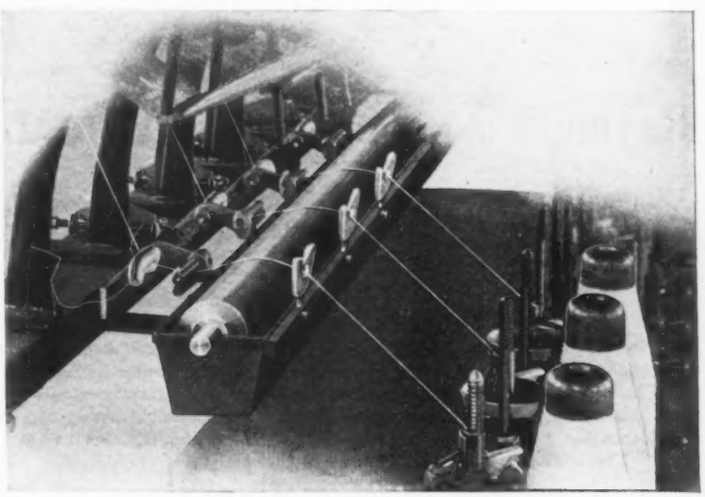


Fig. 1. Roller Trough Method of Rayon Lubrication

The Wick Method. The wick method is illustrated at Fig. 2, and as will be noted is somewhat similar to the roller trough method. The roller is replaced by swabs of felt. The oil is absorbed by the felt and is taken up by the rayon yarn as it passes over the felt.

Spray Method. The spray method finds fewer users today. When the rayon is sprayed there is less uniformity of the oil distribution. The process consists of laying a paper on the floor and spraying a film of oil on the paper. The skeins are spread on the paper and more oil is sprayed on them with an atomizer. The skeins are then covered over with a paper or canvas and allowed to remain undisturbed for hours, the theory being that the oil will distribute itself through the rayon. The results do not substantiate the theory, however, and some places are heavily oiled while others are oiled only sparingly.

Removing the Lubricant

After the rayon is knitted, woven, or braided, the lubricant has served its purpose and must be absolutely removed before dyeing. Soaps cannot be used in many cases for fear of forming lime curds on account of the hardness of the water used. Strong alkalies cannot be used as they tender the rayon, harshen it, and in extreme cases reduce it to a powder. The most efficient product for scouring the rayon is a high grade especially prepared sulphonated oil. A mild emulsifying alkali such as triphosphate of soda is also used.

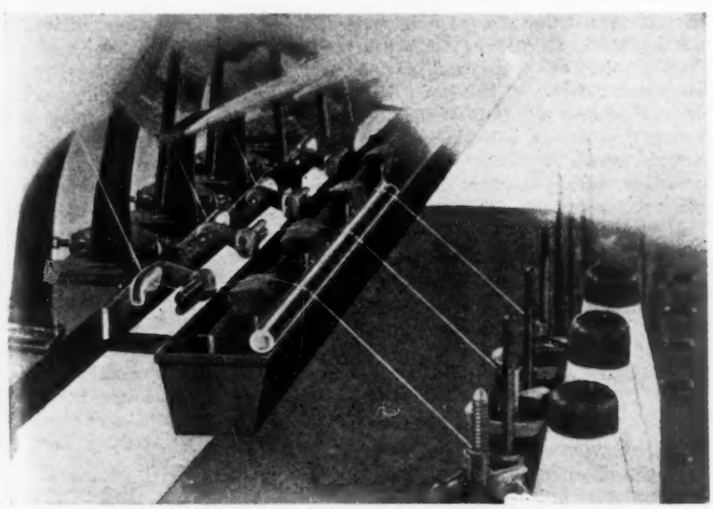


Fig. 2. Wick Method of Rayon Lubrication

The amount of sodium triphosphate to use is dependent on the hardness of the water and the amount of mineral oil in the rayon lubricant. With a soft water and a minimum amount of mineral oil in the lubricant, 4% of the scouring oil and 4% of phosphate are usually sufficient. Where the water is hard and there is much mineral oil in the lubricant, the amount of scouring medium is kept at 4% and the amount of phosphate is increased to 8%. Usually one-half hour at a temperature of 130 deg. F. will be sufficient.

The phosphate of soda is dissolved in the bath and then the scouring medium is added and well mixed. The bath is heated to the proper temperature and the rayon goods added. This will in most cases entirely free the goods from all foreign matter and oil. The rayon is then rinsed with warm water. If the water is hard some phosphate is added to the water.

The Rayon Dyebath

A large proportion of the rayon used today is dyed extremely light shades and tints. Quick dyeing and level shades must be had. The use of a sulphonated oil in the dyebath, 3 to 5% of the weight of the goods, has been found to be beneficial. It has been said that the strength, luster, and feel of the goods is inversely proportional to the length of time the rayon has been in the wet condition. The sulphonated oil increases the

solubility of the dye, retarding the dispposition of the dye on the merchandise to such an extent that level dyeings are assured.

The sulphonated oil must be a well made product and produced especially for this purpose. The ordinary oils are not suitable. When rayon is manufactured into underwear or kindred material where a soft delicate feel or handle is essential, a softener containing an oil is often used in the dyebath. Others apply it to the goods in the last rinse water.

Rayon Softeners

Many people believe that the rayon softener should not contain tallow or sulphonated oil. They claim that these materials will develop an odor in the goods when stored. The rayon softeners must soften the rayon and relieve it of its natural harshness, must not affect the dyed shade, and must not develop any odor in the goods.

The manufacturer of rayon goods should take into his confidence the manufacturer of the rayon softeners in order to produce the desired softener for the purpose in hand. Certain types of rayon goods are finished with a high luster, while others should have the luster dull, so that it is nearer the finish of silk. For this reason only generalities can be discussed.

(Credit is due to Oswald Lever & Co., Inc., for the illustrations used in this article.)

Rayon Warps in the Cotton Mill

Adapting Machinery to Process Artificial Fiber—Spooling, Warping, and Slashing—Allowance for Stretch

By Ray Winder

RAYON sometimes causes a great deal of annoyance in mills that have had little experience with it. Men who have been very successful on other fibers do not always get the desired results immediately, and very often will blame the material without just cause. The trouble of course is that rayon has different characteristics than cotton yarn and is not always adapted to the machines and methods used for cotton. As the reader knows, denier rayon is not spun yarn in the sense that cotton is, but is a bundle of single filaments in parallel position and loosely bound together by a very slight twist. These fibers must be handled very carefully because they are easily separated and torn.

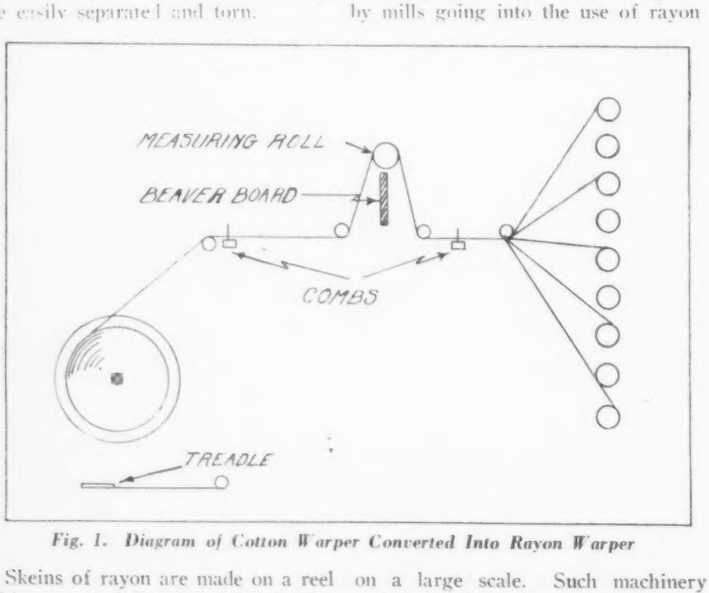


Fig. 1. Diagram of Cotton Warper Converted Into Rayon Warper

Skeins of rayon are made on a reel with a crosswind and are laced with four tie bands. On one of these bands the top and bottom ends are tied. The bands should always be cut and pulled out gently. Under no consideration should they be broken. Breaking them causes injury to the filaments and the result is split fibers. Split fibers will cause a great deal of trouble at every operation that follows, and may make it impossible to weave the material when it gets to the loom. No amount of size at the slasher or sizing machines will fasten these broken fibers down so that they will weave without giving trouble.

Converting Spooler

Rayon that is received at the cotton mill in skeins must be wound on spools, warped, and sized when it is to be used for warps. The question immediately arises as to whether it will be necessary to buy new machinery to process this material. Special rayon machinery that has been brought out by many builders is an advantage and should be investigated by mills going into the use of rayon on a large scale. Such machinery makes available the best ideas on handling rayon. However, there are a number of mills that have built over some of their cotton machinery at little expense and are doing very satisfactory work. The writer will try to show how one mill has been running this fiber on its changed-over cotton machinery.

In this mill the regular cotton spooler was converted into a rayon winder. The yarn boxes, bobbin-holders, thread guides and spool rack were removed. Two brackets were made from cast-iron to hold the swifts. One was attached to the rail that supported the bobbin-holders, and the other was attached to a rail placed where the spool-rack had been. The end from the bottom swift had the thread guide rail for a guide. To this guide rail was also attached a small casting with a ¼-in. round steel guide, under which the end from the top swift was run. This also held the spool while the winder was tying the weaver's knot. (No other kind of knot should be used on rayon.) It was also necessary to change the cam to fit the small 3½ by 2¼-in. spool, and slow down the speed. A winder is able to tend from 30 to 36 spindles on this machine. Machinery builders are now making a combination spooler that can be used for either cotton or rayon. It is a simple matter to change from one to the other.

When placing the skein on the swift, great care should be taken not to break, tear, or tangle the threads while parting or spreading the skeins to find the starting end. Some producers use a colored band to distinguish the band that the starting end is attached to. The skein must be so placed on the swift that it will unwind from the outside. Then the swift brace should be adjusted so that the revolving skein will form a circle. A careless winder will have some swift bands or braces higher or lower, which will cause the swift to overrun itself and thus result in soft places on the spool. Rayon should not be wound soft, nor is it good policy to wind it too hard. It is essential that the winding be kept dry. Rayon readily absorbs moisture from a damp atmosphere and, becoming weakened, does not run well; it fuzzes and breaks easily under such conditions.

Rayon on Warper

After the rayon has been wound on spools it is used either for filling or for warp. In this discussion we will not go into the preparation of the filling but will confine ourselves to the making of warps. Fig. 1 shows an ordinary cotton warper that has been changed over to run rayon. The drop wires have been removed and the measuring roll has been raised. Underneath the measuring roll is a piece of Beaver board, about 12 or 13 in. wide, and extending the full length of the warper. This board is painted black, and is intended to serve as a background for the white yarn, so that the warper can easily see the

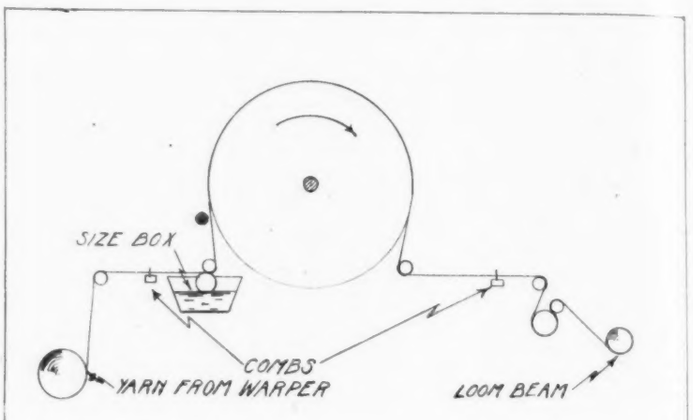


Fig. 2. Diagram of Cotton Slasher Adapted for Rayon

inperfections as they come over the measuring roll. The stop motion also has been removed so that the moment the operator takes her foot off the treadle the machine stops. This machine can be operated at about 30 yds. per minute, depending upon the number of imperfections that have to be taken out. In regard to the number of ends that are run on this machine, the smallest number is 72 ends, and the largest is 1,000 ends. If more than 1,000 ends are needed, two or more beams are made and run together on the slasher. It may also be stated here that the best beam to use on this warper is a 44-in. with a 15-in. diameter barrel. The beam should not weigh more than 90 lbs.

The object of the warper is to put the yarn in a suitable form for the slasher or sizing machine. This operation is also the best place to pick out the imperfections, such as split ends, slubs, etc. The most difficult thing to contend with in the warping operation is carelessness or inattention on the part of the operator. All the ends must be carefully and continuously watched, so that the picking and cleaning that all warps require can be properly accomplished. If these things are not looked after carefully, ends are lost and left out, large knots, lumps, and split fibers get into the warps, which cause countless troubles in the succeeding operations. The practice as regards humidity in the warping room is the same as in the winding room.

Warps for the Looms

The slashing or sizing of rayon yarns is one of the most important operations that the material must pass

through in preparation for weaving. The results produced by the slasher room vitally affect the quality of the product and the output of the mill. For this reason machine builders have given particular attention to rayon slashers and good machines are available. To make a good weaving warp from rayon, the writer has found it necessary to start with a perfectly warped beam, to use a good size formula, and to employ a conscientious operator.

Fig. 2 shows a slasher that has been adapted by one mill for making rayon warps. The yarn does not run down into the size box but goes between the size roll and the squeeze roll. After the yarn leaves these rolls it comes in contact with the hot cylinder in the shortest space possible. For this reason the size box is placed close to the cylinder to prevent stretch, for the rayon while wet may stretch from its own weight. A reasonable allowance for stretch is about 3½%. Owing to this stretch, the rayon has to be woven in slack when used for stripe effects along with cotton. If this 3½% or more elongation is not compensated for by weaving the rayon in slack, the finished cloth may have a crinkly or seersucker effect. After the rayon has passed through the size solution it is dried over the hot cylinder. Care has to be taken not to dry it at too high a temperature or the threads will wrinkle and become brittle.

It is of great importance to have the proper tension on the warper beam and the right amount of cloth on the drag roll at the front of the slasher. The drag roll should just take up the slack and no more. The tension between the drag roll and the loom beam should be only enough to insure a fairly hard warp. The loom beam is best driven by a slip friction from the cone shaft. These warps should be made with paper, the same as raw silk warps.

There are many opinions on what constitutes the best size mixture for rayon, and the writer will not claim that the formula given is the best. It has given satisfaction for a long time on fabrics with as high as 96 picks, 4 ends in a dent. The reader will have to take it for what it is worth and, if interested, try it out on his own particular work. Use 130 gals. of water, 130 lbs. of fine potato starch flour, 30 lbs. British gum, 12 lbs. beef tallow. Boil for 30 min. after the mixture comes to a boil, and keep boiling in the size box to get the best results.

It should be stated in concluding this discussion that no amount of sizing will make a rayon warp weave well which contains many threads with split fibers. These broken filaments will separate, roll, and break more fibers as they are weaving through the harnesses and reed. They form a little ball and eventually the thread breaks down in the loom.

Processing Rayon Hosiery

Improvement in Dyeing—Bleaching With Chlorine—Injury in Boarding—Handling in the Skein

PROGRESS in the dyeing of rayon hosiery has been made by overcoming numerous obstacles. Years ago, when such work was first attempted, many difficulties were experienced and in fact the redyes and seconds caused grave concern. It was sometimes noted when a batch was unloaded from the dyeing machine that several shades were obtained. The dye machines were at first blamed and the manufacturers of this equipment spent a lot of time and money in making improvements. Steam pipes were entered at both ends of the drum to maintain a more uniform temperature throughout the bath, but though this gave somewhat better results, the trouble was not completely eliminated.

It has only comparatively recently become known that the rayon fiber itself, through lack of perfect chemical control, was not uniform in successive batches and that each batch would probably have a varying affinity for the dyestuff. In the last year great strides have been made towards controlling the manufacture of rayon through its various processings, so that now successive shipments of this product may be depended on to give the same shade when dyed by the same recipe.

Bleaching With Chlorine

Because of the fact that rayon was called artificial silk, many hosiery manufacturers were of the opinion that this fiber could not be bleached with chlorine. The chlorine bleach is employed cold and is ideal for this fiber when the process is properly conducted. The addition of a double sulphonated castor oil to the bleach liquor has been found to retard the action of the chlorine, and to allow a greater tensile strength than when it is not used.

Holes in Boarding

As is well known, rayon, when wet, loses much of its tensile strength, but instead of profiting by this knowledge, many dyers and bleachers sent batches of improperly extracted hose to the boarding room. To their chagrin they learned that the percentage of seconds due to holes and tears was very high. In fact, practically all this material will be damaged if given to the boarders in a wet condition. Whereever possible, it is good practice to partially dry this class of work before boarding.

One-Bath Dyeing

A grade of hosiery which has found considerable demand in late years is the so-called three-fiber hose, the boot of which is knit from a thread consisting of three-end silk twisted over rayon. There has been considerable publicity lately in regard to degumming and dyeing this product by the one-bath method. Just what advantages this method of dyeing possesses is hard for the writer to understand. It requires from 14 to 15% of degumming oil, and at least 10 to 20% more dyestuffs in this process than in the two-bath process. It is claimed that considerable time is saved, but the writer has yet to see where any time is saved regularly on a practical scale. The dye recipes cannot easily be standardized, and unless the dyer is an expert, the results obtained are often unsatisfactory.

To carry this procedure out successfully, the dyeing machine should be equipped with a temperature recorder, and the heat should be carefully controlled in each successive dyeing. Should the dilution of the bath from the steam vary day by day, the results will also vary. Degumming oils may be loaded with silicate of soda, which will precipitate out on long standing in storage, causing another source of trouble.

The writer has seen, in a southern mill, many batches of this type of hosiery that were spotted. The blame was first laid to poor penetration, and much time and money were wasted in attempting to locate a penetrating agent that would eliminate this defect. After careful investigation, it was found that the dyer salted the bath rather heavily, causing the silicate of soda to go out of solution and become attached to the hose, thus causing the spots.

Processing in Skein

The processing of rayon in the skein has also given much trouble. The difficulty here was mostly mechanical, and it was a question of the operatives becoming accustomed to handling this delicate fiber. As in the case of hosiery, the improvements made by the manufacturers of rayon in controlling its uniformity has eliminated very much of the uneven dyeing. However, in dyeing this fiber with vat colors, considerable unevenness of shade is still experienced, especially when dyeing is done in tubs with hand sticks. This is due to premature oxidation where the skein is exposed to the air. To eliminate this spotty work, the writer is now having installed in a southern mill a machine which allows the skeins to be submerged at all times during the dyeing operation and automatically raises and turns the skeins during the procedure. This machine is ideal, not only for vat dyeing rayon skeins, but also for dyeing cotton skeins, and will give uniform results.

After dyeing or bleaching, rayon in skeins should be treated according to the uses for which it is intended. For knitting, the fiber should be treated with a lubricant, usually neatsfoot or olive oil diluted with kerosene for penetration. If it is to be used for weaving, the fiber must be sized. This procedure has caused considerable trouble due to the use of ingredients not adapted to this particular treatment. The size mixture must be uniform and must be applied evenly, otherwise the elasticity or stretch of the rayon will vary, causing shiners—the bane of weavers' lives. A very good mixture for this purpose is a locust bean gum and starch.

Finishing Mixed Fabrics

Rayon today is also finding extensive use in mixtures with wool, cotton, silk, and other fibers. It has always been customary to finish piece goods, such as shirtings, dress goods, etc., with mixtures containing a fatty substance as a softener, penetrator or carrier for loading materials. Where rayon stripes and designs have been constructed in these fabrics, the same mixtures are often used and as a result much discouragement over the appearance of the finished materials is experienced. When finishing rayon mixed fabrics, and the gloss of the rayon is to be maintained, compounds of a fatty nature should not be used. This is true with but few exceptions.

Glycerine and locust gum will give any finish desired, and the gloss of the rayon will still be retained. When working with rayon, rather than to proceed blindly, it will be found profitable to consult with someone who is experienced in this line of work.

Demand and Supply of Rayon in Japan

(In pounds)

Year	Production	Imports	Total	Exports	Balance or Consumption
1918	100,000	77,670	177,670	7,000	170,670
1919	140,000	76,290	216,290	30,000	186,290
1920	200,000	80,410	280,410	15,000	265,410
1921	150,000	138,783	288,783	5,000	283,783
1922	250,000	225,340	475,840	6,000	469,840
1923	800,000	1,022,245	1,822,245	5,000	1,817,245
1924	1,500,000	904,703	2,404,703	5,000	2,399,703
1925	3,000,000	34,000	3,340,000	7,000	3,333,000

As will be noted from the above table, the consumption of rayon increased from 170,000 lbs. in 1918 to 3,333,000 lbs. in 1925. (*Japan Financial and Economic Monthly*).

Rayon Industry in France

M. Fougare, president of the National Silk Federation, made public figures showing the progress of the rayon industry in France and the relation of the production of rayon to the output of natural silk, which is one of the staple industries of France. From these figures it is shown that in 1924 the total output of rayon was 6,000,000 kilos (6,000 tons), or rather less than 10% of the total world output of 65,000 tons. Analysis shows that 50% of the total consumption was utilized for underclothing and other "articles de bonneterie"; 30% for piece goods; and 20% for ribbons and trimmings. The total consumption by the existing silk industries was 6,300 tons in 1924 and 7,000 tons in 1925 (a portion of the rayon absorbed, is of foreign origin, of course). In 1924 the French silk industries absorbed 6,200 tons of natural silk, not more than 300 tons of which were produced in the country. (*The Economist*).

Difficulties Encountered in Knitting Rayon*

Developments That Have Puzzled Knitters—How Faults Have Been Caused and the Remedies That Overcame Them—Common Machine Troubles Are Not Always Easy to Recognize—Horizontal Streaks and Banded Effects—Cut and Chafed Yarns

By Gilbert R. Merrill

WHILE rayon has helped the knitting industry to produce many attractive fabrics, it has also added some difficulties to the production of first-grade fabrics and articles. Of course all the usual mechanical troubles are present and in some cases these are exaggerated because rayon is so smooth and slippery and, in addition, makes a fabric which reflects light so readily that variations in texture are quite apparent.

It is always well to keep various lots of rayon separate, using all of one shipment before starting another, or at least keeping all the yarns on one machine from one shipment. This is because lots of different ages seem sometimes to have different colors. This may be due to the action of the air on the older lot, or perhaps the two lots were not identical in the chemical production.

As the producers of rayon further develop their technic and produce finer filaments, it opens another field for difference in yarns which are the same size. The differences in the various grades due to color, knots, and broken filaments is readily appreciated, but the difference due to a varying number of filaments is not so apparent. A yarn that is 150 denier has a definite weight and the first inclination is to feel that all 150 denier yarns will be the same. However, a little thought will show that if one strand had 10 filaments and another 50 filaments, there would be a considerable difference in the appearance of the yarns, even when they had the same weight. This exaggerates a little, but in a recent comparison of two competing stockings, each using 150 denier rayon, a deciding factor in settling the question of which was more desirable was the number of filaments. One yarn had 18 filaments, the other had 21.

Real silk is spoken of as having "a better covering power than rayon for the same size." This is partly due to the fact that the number of filaments in silk is greater than in rayon of the same denier. When plating, the greater number of filaments can flatten out over a wider area and so more completely cover another yarn.

Horizontal Streaks

Some of the common machine troubles are not at once recognized when using rayon. One manufacturer of outerwear produced white fabric showing horizontal streaks, which he had tried to wash out but could not. He tried bleaching the fabric but found that that did not help either. Fig. 1 illustrates the appearance of this fabric as far as the camera will record it. A close examination showed that the streak appeared at regular intervals, and when raveled showed that a greater length of yarn was obtained from the course which showed a streak. It was the old story of one feed drawing a longer loop than the others.

In the underwear field, where spring needle rayon tubing is so common, there are the tuck stitches and needle streaks that prevail in other goods. With these, it is a matter of correct mechanical adjustment.

One very troublesome difficulty in this rayon tubing production is the elimination of horizontal streaks. The explanation of the cause for these seems simple at first. It would seem that one feed was drawing a longer loop than the others. This will not solve the problem, for in one instance many yards of yarn were backwound from a tube and all feeds showed practically the same length. The tubing was from a multiple feed machine and a special apparatus was used to make possible raveling all the ends at once. If one feed used appreciably more yarn than another, the raveling would proceed around the tube at a slower rate than for the others. Eventually the yarn from this feed would lag behind until it interfered with another end. As this trouble did not occur in raveling many yards, it was clear that each feed drew practically the same length of loop.

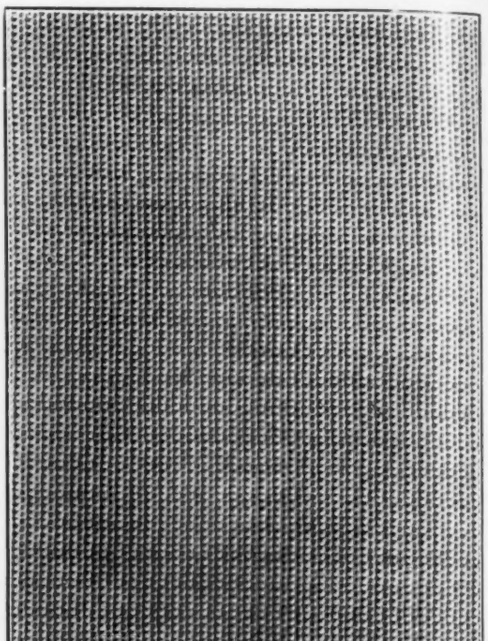


Fig. 1. Horizontally Streaked Fabric

Examination of the skeins raveled showed that some were slightly lighter in shade than others. This, then, accounted for the horizontal streaks but as the fabric was pieced dyed it did not show the source of the trouble.

Special care was taken that rayon from the same source and the same shipment was used on one machine, but even then the trouble occurred. It was not possible to show that one shipment was all from the same lot of the manufacturer and so it would seem that the trouble might be due to the yarns coming from different lots and so differing slightly in their affinity for the dyestuff used.

Silk Plated Over Rayon

There have been instances where this horizontal streak effect was produced by using mixed sizes, but this trouble is more rare and should be apparent in the undyed goods as produced on the machine.

One of the common troubles of the present in hosiery manufacture is an unsatisfactory silk plated over rayon stocking. When using a three-thread real silk plating yarn and a 150 denier rayon, the silk is hardly sufficient to fully cover the rayon. As the usual silk size is 13/15 denier, a three-thread is equal to about 42 denier in the gum, and this is likely to be reduced to about 31 denier after degumming. Thus the 31 denier is supposed to cover the 150 denier.

Very often the silk and rayon do not dye the same color and so if the silk covering is incomplete, the rayon color shows through. The only remedies for this trouble are using heavier silks, or, if this is too expensive, dyeing so that the silk and the rayon are the same shade.

Banded Effects in Stockings

Another trouble that arises in this connection is banded effects in the stockings. These bands are usually caused by uneven silk and are not a fault of the rayon. The only cure for this trouble is using a better quality of silk. Fig. 2 shows a fine real silk yarn stocking leg. This shows how the silk may be uneven and make a banded effect when plated over rayon.

One pecular trouble which recently occurred is a banded all-rayon circular stocking. The bands seemed to be horizontal and due to difference in texture. Closer examination showed that actually these bands spiraled

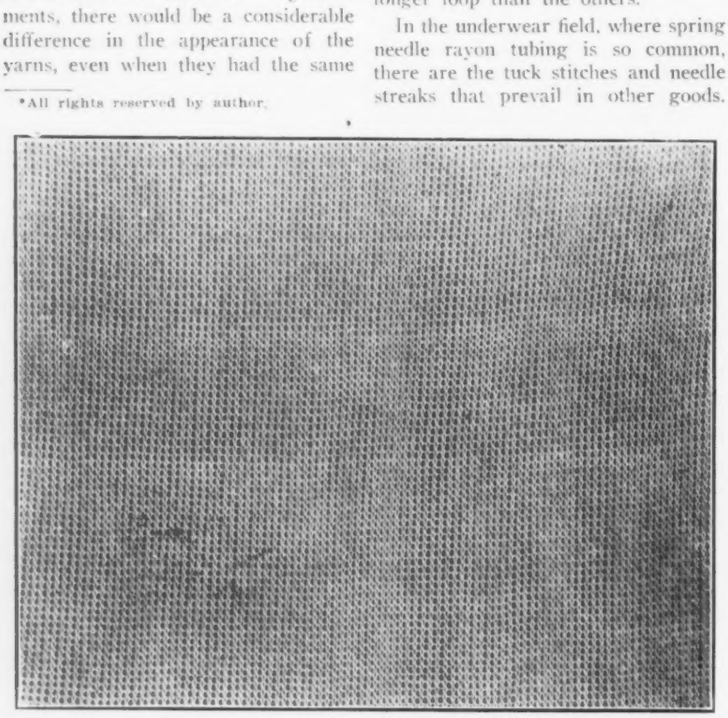


Fig. 2. Uneven Silk, Showing Why Banded Effect Results. (This Is Silk Only.)

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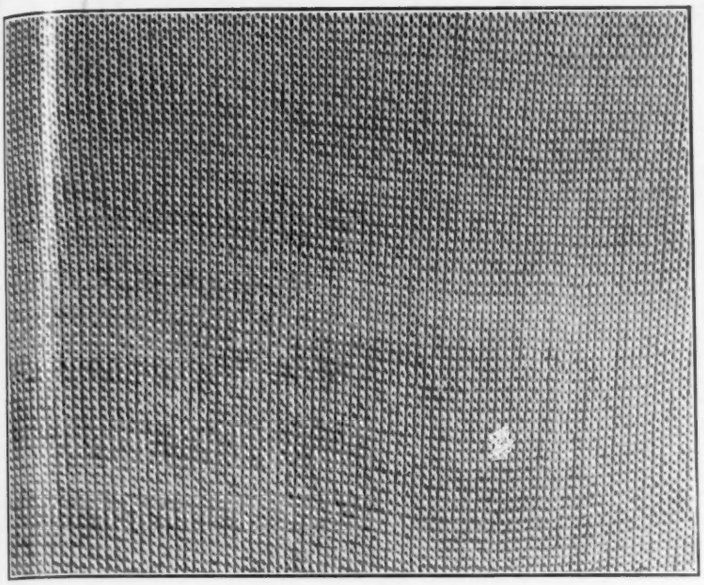


Fig. 3. Spiral Bands, Due to Uneven Tension

around the stocking and were due to the loops being tighter than normal over a certain distance for each course. The distance between these tight places was not exactly the circumference of the tube. Thus, each time the tight loops occurred, they were slightly ahead of the position of those of the preceeding course. Thus the band advanced around the tube but almost on a horizontal plane. Fig. 3 shows a portion of this stocking leg, illustrating the bands made by the tight stitches.

This trouble must have been due to uneven tension on the rayon during knitting. This tension occurred at quite regular intervals, such that the length of yarn unwound from one tight tension to the next was slightly more than that used in one revolution of the machine. The most likely cause of this trouble is a defective bobbin in the creel of the knitting machine. A rough spot on the barrel of the bobbin might cause this trouble. If a bottle bobbin with too long a barrel is used, it might cause this trouble when nearly empty. As the yarn unwinds from the small diameter at the upper end of the traverse of the nearly empty bobbin, it rubs on the barrel enough to produce more tension than when ballooning from the larger diameters.

Cut and Chafed Yarns

Cut rayon yarns sometimes produce a stocking with a very fuzzy surface. This is generally due to cutting a few, not all, of the filaments of the rayon yarn. The cut ends project, making a fuzz. This trouble is largely due to faulty machine adjustments. If yarn guides are set so the needle hooks "split" the yarn, this trouble will result. Sometimes the guide is set so that the yarn is pinched by the latch as it closes and this breaks the filaments. There have been occasions when the stitch drawn was too short. In this case, the trouble probably resulted from the needle latch and hook breaking the rayon as they descended through a loop too small to accommodate them. Where a more elastic yarn would stretch and recover from this strain, the rayon filaments break.

In one case, a rayon plated over cotton stocking showed a marked difference in appearance. Testing showed a difference in denier of the rayon. As this is the only instance where this size difference occurred, it probably is not common.

Another trouble encountered with hosiery is chafed rayon. This chafing often occurs in the finishing operation. It may be in almost any degree from a slight roughening to a complete wearing away of the rayon. When dyeing in rotary machines, or when using any similar action, rayon is sometimes very seriously chafed. Being wet and weak (for most rayon) this is the time when any roughened surface can most easily break filaments. Fig. 4 shows how the rayon was chafed away, so that in some spots cotton only remained. Sometimes stockings are chafed in the boarding room when they come in contact with some slight roughness of trucks, tables or boards.

It is generally difficult to locate the source of trouble of this kind. It is a matter requiring close inspection of all the equipment used.

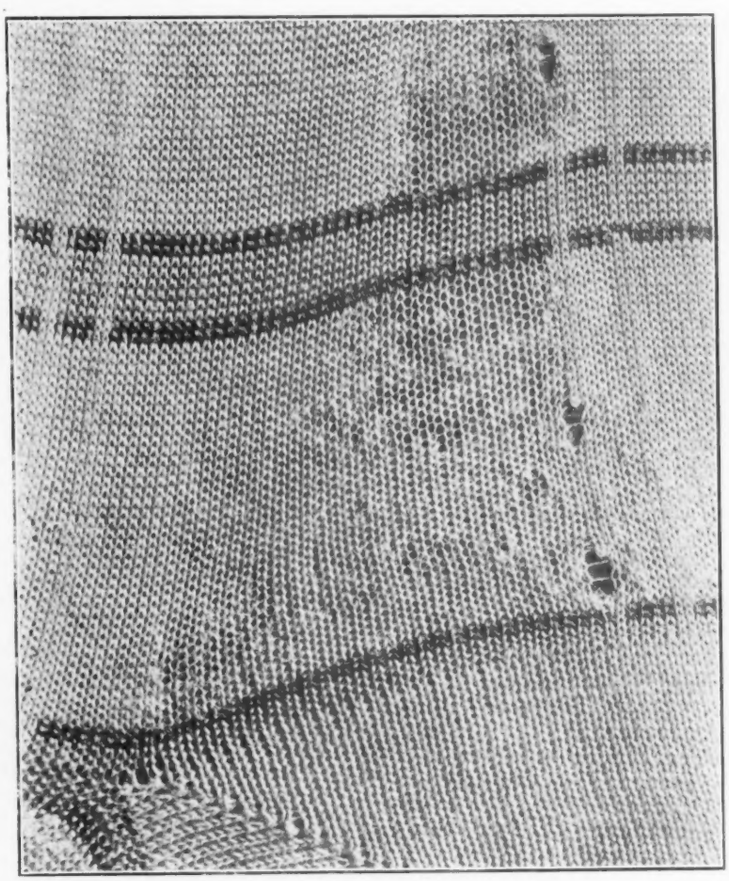


Fig. 4. Rayon Plated Over Cotton, Chafed

Silk and Rayon Combination Yarns

Fill a Definite and Permanent Place in Textile Industry—Combinations of Rayon and Other Yarns

By F. Osborne Pfingst

Vice-President and Treasurer, Geo. B. Pfingst, Inc.

ONE of the important uses of rayon is found in the production of combination yarns, which are made by twisting rayon with yarns made from other fibers. Such combinations are in common use today although their production was started not over ten years ago. It would probably be more correct to place the beginning of their manufacture and use at a more recent date—say five years—for the real development of rayon combination yarns that are perfectly adapted to the use of the various classes of textile manufacturers has taken place since 1920. As manufactured at present, rayon combination yarns fill a definite and permanent place in the textile industry. They are not competitive with other yarns, but rather serve as an ally, rounding out the range of qualities demanded in textiles.

The real impetus to the development of the combination yarn came from a desire to manufacture a "silk" stocking at a popular price, and it was natural that rayon should be tried. Knitters found the new fiber ideally suited to the knitting machine. It was readily adaptable to combination with silk. It enabled manufacturers to offer stockings that combined beauty with durability at a moderate price, and to cater to the growing demand on the part of everyone for better merchandise. The stocking made of the combination yarn defied detection on casual examination as not all-silk, and instantly became a most popular seller. Today, a large part of the total dozen pairs of hosiery manufactured in the United States are made of combination rayon and silk yarns, and wonderful opportunities still await the alert manufacturers who put such numbers in their lines.

In addition to the goods usually referred to by the trade as "fiber," rayon made possible many attractive novelties which have been offered during the last few years with notable success and profit to the manufacturers in many cases. Many striking effects have been secured largely by the use of cross-dyeing, and here again the product has been within the reach of the average pocketbook. Combinations of rayon and wool in half-hose and in women's goods have found a ready market for sports wear. The popular heather mixtures of a short time ago were secured by cross-dyeing rayon and wool, producing the so-called two-tone effects.

Obviously the use of combination yarns is most common in the knitting industry, due to the fact that such marvelous results can be obtained with them, particularly in the manufacture of hosiery. Woven goods manufacturers can get their combinations by employing individual yarns of various fibers in warp and filling and, consequently, obtain their desired effects. Even the knitter can secure a combination by plating. But a combination yarn, as the term is employed here, means a combining of two or more individual yarns of different fibers by means of twisting, so as to make the one finished thread serve the purpose of two different

yarns in order to obtain a more even finish and better stitch.

Naturally, the great improvement in the manufacture of rayon itself has produced a like improvement in the goods made from it. At first, the rayon was too blatant, but now the glare has largely been removed, and the real silky appearance is most noticeable and greatly admired.

Solved Technical Problems

While the growth in the use of rayon in combination yarns has been rapid, this does not mean that there were no problems from the technical standpoint. The proper combination of rayon and other fibers requires more than a knowledge of the fibers—more than care and skill in handling. It requires considerable knowledge of the knitting machine and the resulting effects. The two or more yarns to be combined must be carefully selected. They must have a certain "affinity" for each other. The twist must be right, not only for the manipulation of the winding machine, but for the unwinding on the knitting machines. Knots must be carefully tied. Softness, thickness, uniformity are a few of the other factors that must be given careful attention.

Of even more importance than the foregoing is the proper use of oils to put the yarns in the best condition for knitting. It would surprise the average mill man to witness the marked effect that different oils, used in different quantities, have on the appearance, durability, and "knitability" of the combination yarns. These matters have all required careful study and experimentation to arrive at methods that give the best results in fabric manufacturing. In consequence, the hosiery, underwear, novelty goods and woven fabric manufacturer has in these combination yarns an ally in the production of goods with a pleasing attractiveness at a popular price.

Analysis of Rayon-Worsted Yarns

Technical Editor:

We would very much appreciate any information you can give us as to a method of analysis for rayon and worsted mixture yarns. (5892)

THE method suitable for analysis of rayon-worsted mixture yarns will vary with the type of rayon present. There are five commercial possibilities for rayon: celanese, lustron, nitrocellulose, cuprammonium, and viscose rayons. For analysis, these five may be divided into two main groups: (1) Acetate silks including celanese and lustron; (2) regenerated celluloses embracing the last three. The first part of the problem then is to determine the type of rayon at hand.

This is readily accomplished in several ways. A simple way is to apply the burning test. A tightly twisted wad of the rayon fibers is approached very closely, but not necessarily into, a burning match flame. Group 1, or acetate silks, will "fuse" back, ignite, and burn slowly with a "melted" globule of cinder preceding the flame on the yarn. If this flame is extinguished and the cinder cooled, the globule will be hard. A lack of the odor of burned hair (if no wool fiber is present) will exclude the presence of real silk. Group 2, or regenerated cellulose fibers, burn and emit an odor like cotton fiber itself.

The acetate fibers readily dissolve in certain solvents like boiling glacial acetic acid, or warm acetone (caution—dangerous near flames), whereas the other types of rayons do not dissolve.

Nitrocellulose silk is readily distinguished from all others by the diphenylamine test. Dissolve 1 gram of diphenylamine (from any drug store) in 100 grams of concentrated sulphuric acid. Add 1 or 2 drops of this solution to the water moistened rayon fibers, and an immediate blue color and finally a blue solution is given by nitrocellulose silks only.

Cuprammonium and viscose rayons behave very similarly to each other in analysis. If, then, the rayon is not soluble in glacial acetic acid and does not turn blue with diphenylamine in concentrated sulphuric acid, it is of cuprammonium or viscose type.

When the type of rayon is known the method of analysis may be easily selected. For mixtures of worsted (wool fiber) and rayons of the regenerated cellulose types, that is, nitrocellulose, cuprammonium, and viscose, the use of a 5% hot caustic soda solution can be applied. The caustic soda method cannot be used with the cellulose acetate group, that is, celanese and lustron.

The analysis will include moisture, oil, wool and regenerated cellulose rayons. Wind off four "air dried" skeins, suitably sized for the apparatus at hand. Weigh each accurately. Place two weighed skeins in a hot air oven (best when provided with a means of circulating the air inside), and heat to constant weight at 110 to 115 deg. C. This means to heat the skeins for one hour, remove into glass stoppered weighing tubes, cool in a desiccator, and weigh. Replace into the oven after weighing, and heat ½ hr. more at the same temperature. Cool and weigh again. The two weights should agree very closely. The yarn is then "bone-dry."

To compute the per cent of moisture, subtract the bone-dry weight of the skeins from the original weight in air (air dried weight). The difference is the "loss in weight on drying," or is "moisture." Divide the loss in weight by the original air dried weight, multiply by 100, and the result is the per cent of air dried moisture.

Next extract these same skeins thoroughly with petroleum ether (avoid fires), to remove the oil. This may be done by working the skeins in the petroleum ether in open containers with the hands for 5 min., then squeezing thoroughly and immersing in fresh petroleum ether for 5 min. The oil is usually entirely removed by this treatment. In most cases where there is no appreciable amount of dirt or loss of loose fibers, the loss in weight of the skeins by this extraction will be a sufficient guide to the oil (and dirt) in the yarn.

After thorough extraction, dry the skeins in air to remove all petroleum ether, then heat again to constant weight in the hot air oven. Cool skeins out of contact with moist air (i. e. in weighing bottles and desiccators) and weigh. The loss in weight divided by the air dried weight, multiplied by 100 gives the per cent of oil (and dirt) in air-dried yarn.

A more accurate way to determine the oil is to use petroleum ether and a Soxhlet extractor. After complete extraction of the oil, filter the ether solution to remove dirt, evaporate the ether on a steam bath in a weighed container. The oil will be left in the container after all the ether has evaporated. Dry the container in the hot air oven by heating to constant weight at 105 deg. C. The final weight of container, plus oil, minus the original weight of the empty, dried container, gives the weight of oil extracted from the yarn. This weight of oil divided by the weight of the air-dried skein, multiplied by 100, gives the per cent of oil in the air-dried yarn.

The last step is to determine the amount of regenerated cellulose rayon by using the same two skeins after the oil extraction, if desired, or, for better economy of time, by using the two remaining from the original four. Make up a sufficient quantity of 5% caustic soda for the test by dissolving solid caustic in water in the ratio of 5 parts caustic by weight to 95 parts by weight of water. Suspend the caustic at the upper level of the water and it will dissolve rapidly.

Prepare two dishes suitable for hot liquids, place one weighed skein in each dish and add enough of the caustic to each dish to amply cover the yarn. Heat at 180 to 200 deg. F., while constantly stirring, for 10 to 15 min., decant the liquor through an inclined 100 mesh brass sieve into the sink. The loose fiber and yarn will be retained by the sieve. Wash these well in running water. If the wool is not entirely dissolved, repeat the heating with caustic. After a thorough wash of the rayon residues in running water, place them into a dilute acetic acid solution to neutralize all alkali left after rinsing. Decant through the sieve and wash free of acid and soda salts. The rayon residue may then be dried to constant weight in the hot air oven at a temperature of 110 to 115 deg. C. The drying may be hastened and any fatty matter remaining may be removed by giving a rinse first in denatured alcohol then in sulphuric ether, after the final washing out of acid with water. Evaporate all ether from the yarn by air exposure before putting into the hot air oven.

The bone dry residue of rayon silk must be corrected for the slight loss in weight it has suffered by the action of the caustic soda on the rayon substance. This is done by use of a factor which has been determined by experiment upon the various regenerated cellulose rayons in a similar test. The factors may be tabulated as follows:

(1) Nitrocellulose silk loses 8.4% of its weight; (2) Cuprammonium loses 3.96% of its weight; (3) Viscose loses 2.26% of its weight. These are figured on bone-dry residue.

The factor for a given silk is used by subtracting the respective percentage given above from 100, then dividing the weight of bone-dry rayon obtained from the yarns being tested by the difference. The result is the "corrected" weight of bone-dry rayon fiber in the original yarn. This weight, divided by the original air-dried weight of the skein, multiplied by 100 gives the per cent of bone-dry rayon in the air-dried sample.

Add the per cent moisture, per cent oil and dirt, per cent bone-dry rayon, and substract their sum from 100. This gives the per cent of bone-dry wool fiber in the original air-dried yarn.

In many cases the results are left in this condition. In other cases the moisture is apportioned between the bone-dry rayon and the bone-dry wool, in accordance with their relative hygroscopic natures, to give the "conditioned" weights of rayon and wool. Again, owing to the difficulty in comparing analyses of yarns made with different moisture contents, results may be expressed in the terms of per cent bone-dry rayon and per cent bone-dry wool in the bone-dry, oil-free yarn. To do this subtract the sum of per cent moisture and per cent oil from 100, obtaining the per cent bone-dry fiber in the yarn. Then divide the corrected bone-dry weight of rayon residue by this per cent bone-dry fiber, and multiply by 100. There is thus obtained the per cent rayon (and per cent wool by difference) on the bone-dry or moisture-free basis.

There now remains the analysis of acetate rayon mixtures, with wool. The acetate rayon may be boiled out with 70% or stronger acetic acid, the wool residue washed free of acid, and bone dried. The correction factor for the slight solvent action of the acetic acid on the wool could be determined at the same time. The final resulting percentages would be determined in the same manner as they were in the case of regenerated rayons and wool.

Rayon Research Work

At the annual meeting of the British Cotton Industry Research Association recently held in Manchester, it was stated that a proposal was on foot to extend the activities of the association to include work on the utilization of rayon with cotton. It is estimated that an outlay of from £5000 to £6000 would be required and an annual expenditure of £2000 to £3000. Inquiries are now in progress in regard to the possibilities of raising the necessary funds.

Wool and Rayon Combination Yarns

Utilization of Waste—Attitude of Wool and Worsted Manufacturers Undergoing a Change—Diameter and Length of Fiber Important—Combers Supply Rayon Tops and Combination Tops—Rayon Gives New Life to Old Fabrics—Developments of New Machines and Methods

By Brompton

AFTER S. C. Lister had raised himself to a position of affluence by successfully combing wool on a machine of his own invention, accident showed him a new world waiting to be conquered. Going into a London warehouse one day, he came upon a pile of strange looking material which attracted his attention. He had never seen anything like it before, and inquired what it was. He was told that it was waste silk and was sold for rubbish.

Mr. Lister examined some of the stuff; it was disagreeable to the eye, to the smell, and to the touch, and was in short the most uninviting aggregation of rubbish that it was possible to conceive. It really consisted of the waste made in the manufacture of thrown silk, along with pierced cocoons, and resembled nothing so much as mutilated rope, dirty flock, mucilaginous hemp, and bits of stick, mixed and knotted up with dead silk worms, portions of mulberry leaves, and a liberal percentage of dirt.

Mr. Lister had had no connection with the manufacture of silk, and he knew nothing as to the real nature of the stuff before him, beyond the information which was then given to him, but he came to the conclusion that it might be possible to do something better with the stuff than to use it for rubbish, and he made an offer to buy the lot at the price of a half-penny a pound. The owner was delighted to get rid of the stuff at such an advantageous price, and the sale was completed.

A Lucky Blunder

When Mr. Lister got this material down to Manningham, he spent a good deal of time analyzing it and dissecting it. Knowing nothing about silk, he made a lucky blunder; he knew all there was to know about wool, and in his ignorance of the peculiarities of silk, he subjected some of his waste silk to a combing process, and treated it exactly as if it had been wool. No man who knew anything about silk would have dreamed of doing such a thing, but Lister's ignorance started him on a series of experiments that led to immense results.

By treating the sample of waste on the wool processing principle, he produced exactly what was wanted—a continuous sliver of silk that proved to be worth a fortune. He was so ignorant of silk and all concerning it that he did not know that this was the very thing silk manufacturers wanted—this continuous sliver of silk. It was on this foundation that he built when commencing the long series of experiments that resulted in the creation of a big fortune and the biggest silk mill in England—on an accidental discovery arising from simple ignorance.

Principle Applied to Rayon

The machines originated, invented, and used by Mr. Lister, who was the first Lord Masham, have been used in the making of admixtures of spun artificial silk and wool yarns, and also for artificial silk without wool, and are proving themselves to be excellent for the purpose, though there are striking differences in the manipulative properties of artificial silk and waste natural silk. Combinations of wool and artificial silk in the proportions of 50/50 have been spun to 105s worsted counts on this system, the wool used in this case being 70s botany.

A real endeavor is being made at the present time in England to adapt woolen and worsted machinery for spinning artificial silk, either alone or in association with wool, and for introducing styles and fabrics of attractiveness and utility so as to develop a new industry or sub-branch of the older industries. The former intolerant attitude of British woolen and worsted manufacturers to synthetic fibers is now undergoing a rapid change, and some firms are now finding that their most profitable business is in the utilization of the newer material.

The acceptance of artificial silk in the wool industry has been on the very satisfactory and usually staying principle of evolution. Many firms as yet will not entertain it: artificial silk combers may yet be numbered on the fingers of one hand, yet in spite of this, there are great possibilities of the material in its new form; that is, as "fibro," in which form the artificial silk fibers are in cut lengths suitable for the worsted and woolen systems of yarn making, with or without the admixture of wool.

It is by being blended with wool that this "fibro" enters into competition with wool more than when used alone, or in filament form. The artificial silk yarns made by "blowing," or spun straight from the gelatinous cellulose, has affected the mercerized cotton trade, and also the mohair lining and brilliantine trade, besides cutting out of use many fabrics formerly made of pure silk, but apart from its use for knitted goods the woolen and worsted trades have not been greatly affected. This is revealed in the fact that stocks of wool are low in all countries.

Diameter of Fiber Important

The mixing of wool and artificial silk or "fibro" in the worsted trade is growing apace. Statistics are not available as to how much wool has been displaced by artificial silk, although it was recently stated that it was not less than 60,000 bales. Against this must be placed the amount of wool which, except for a proportional admixture with artificial silk, would not have been called for. Artificial silk as "fibro" can be obtained in different lengths to suit the length and quality of the wool with which it is to be mixed. Owing to the importance of drafting in the manufacture of worsted yarns, it is necessary to study closely the requirements in respect to length of "fibro" ordered. The diameter of the filaments is to be considered also, approximation here assisting uniform distribution.

Artificial silk combers are now prepared to supply the following:

(a) All artificial silk tops.

(b) Artificial silk and wool tops in almost any proportions.

(c) They will comb on commission for any spinner wool and artificial silk of his own purchase, in any desired percentages.

(d) Artificial silk in any color or color mixture.

Spinners will supply manufacturers with yarns from either a, b, c, or d, in twist, marl, or other fancy yarn form.

Length of Fiber

The condition of "fibro" as obtained from the makers may be questioned. This material is in cut lengths, to obtain which a guillotine is used. This is considered a very unworsted method of preparing fibers for combing, drawing, and spinning. While we recognize that material of uniform length is certainly better than material varying in fiber length, yet the square-ended mass of fibers demand special initial treatment to break up their uniformity, and to lay the fibers in sliver form, in suitably overlapped condition. Three or four fibers in square-ended formation may make an irregularity in the subsequent thread. Whether "fibro" makers can turn out the material in alternative and more usable form is not known.

In the worsted industry the association of artificial silk and wool was first made to meet the desires of knit goods manufacturers who saw possibilities in this coalition of fibers, and it cannot yet be said that they have exploited its usefulness to the full. Uses are still being found for yarns made from blended materials, for underwear and also for outer garments. It is for the latter that these fibers are blended; the wool giving warmth, handle, and durability, while the "fibro" gives lightness and brightness in appearance.

While many claim that the new fiber will never take the place of wool—and this is quite true—others are equally sure regarding its future possibilities. Its ultimate place in the wool industry will lie between these two extremes. It will be an auxiliary rather than a supplanter, a stimulator, rather than a rival. Artificial silk will help to sell wool by giving certain well-known fabrics a new lease of life when associated with the wool from which such fabrics have hitherto been produced.

Gives New Life to Fabrics

The recommendation of the admixture fabric is not that it will give a softer handle, but that it will make the blended fabrics more pleasing to the eye. The latter appeal is two-fold. The luster is of peculiar value for the making of linings, or when mixed with mohair or luster wools for the production of sicilians and similar fabrics. Luster also gives to fabrics made from fine wool and "fibro" a distinctiveness which has a decided value as a selling factor. There is a luster which deprecates, as when botany cloth and cloth made from cross-breds are compared, but the luster accompanying the use of artificial silk is not of the same order, and may be said to be more acceptable to the average wearer.

The other appeal which blended fibers have to the general public is the color effect when the wool and the "fibro" are cross-dyed. This will be heard of more in the future, as the "fibro" is now being used in the making of coating yarns for suitings. The present vogue in whipcords for suitings will be extended, probably to the detriment of the pure botany mixture trade. In these latter fabrics the proportion of artificial silk is 1 to 3. When worked up in the gray and submitted to the dyer, these are cross-dyed, and a whole range of color effects are produced. These when made up into suits appear very smart, and provide a new line for men's wear.

With this extension of the use of artificial silk for men's outer clothing one might well pause and ask what the future has in store. If these fabrics have a lasting popularity, and there is every reason to believe that they will, how long shall we wait before not only worsted cloths, but woolen cloths for both suitings and overcoatings will be available for all wearers containing a proportion of artificial silk? In the woolen trade, artificial silk may replace some of the cotton now used, although it is also certain that wool will also be displaced. The displacement, however, is likely to be only temporary.

The woolen trade will be almost

bound to use artificial silk if other industries use it, because the waste produced will be offered to them at tempting rates. Artificial silk mixed with wool or cotton will cause waste to be made containing blended fibers, and these, it is expected, will be assimilated by the woolen industry. There will be, without properly organized methods of storing or testing, mixtures of various silk wastes, such as acetate, viscose, etc., with wool, cotton, and pure silk. This will add to the study of woolen manufactures and probably revolutionize the system of working, besides giving rise to the production of new yarns and fabrics.

The story at the commencement of this article shows how Lister, experimenting on the then known machinery, had to evolve new types of machines before getting satisfactory results. It is probable that the same line of development will be necessary to get the best results from the use of artificial silk worked pure or mixed with wool or cotton. Materials differing so much in chemical and physical features as these do will perhaps necessitate the evolution of new and special types of machinery. If this is so there is no doubt that with co-operation between machine makers, combers, and spinners, the same successful results will accrue as in the case of Lister and silk waste.

Rayon Underwear Fabric

Removing Oil From the Goods—Scouring, Dyeing, Drying, and Finishing of Knitted Fabrics

By Irving L. Sheldon, Jr.

AS time goes on the use of rayon for knitted underwear is increasing very rapidly, and the demand is for a fabric that is soft yet durable. With such requirements the handling of the rayon from the yarn to the finished garment calls for close supervision over each operation. When every detail in the manufacturing and finishing of rayon knit fabrics is carried out correctly and thoroughly, one does not experience the troubles that were of common occurrence a few years ago. The manufacturing of the rayon itself has reached such a stage of perfection today that this fiber may be handled successfully in all wet processes. The difficulties once met in attempting to get all lots of cloth alike have practically disappeared.

Rayon yarn, as used for women's undergarments, comes to the knitting mill in skeins. The skeins are prepared for the knitting machines by soaking them in a conditioning oil for about 20 min.; extracting; and then winding the material on spools. The yarn is knitted into fabrics of various widths, from 17 up to 26 in., in pieces about 90 yds. long. The cloth comes to the dyehouse containing oil which must be removed by scouring before dyeing. It is essential that all the oil be removed during the scouring process so that there will be no odor of oil noticeable after the garment is made up. This has been, and still is, one of the troubles which manufacturers of rayon goods are trying to overcome.

Scouring the Cloth

Various methods of scouring have been tried by the writer and it has been found that the best results are obtained by using a very heavy soap, similar to a fulling soap. It removes all traces of oil from the cloth and there is no rancid odor noticeable after the goods have been finished. Certain rayons hold the oil more tenaciously than others, and this must be taken into consideration in scouring.

Scour Before Storing

If the goods have been lying around for a long period of time, they often will need a double scouring to remove all of the oil present. It is detrimental to knitted rayon to let it lie around for any great length of time. If it is to be stored for more than six weeks, it is best to give it a scouring and dry it up before putting in storage, in order to prevent it from becoming tender, due to the oxidation of the oil.

After scouring, the goods must be thoroughly washed in hot water. During this wash, the kettle is allowed to overflow. In this way the oil will rise to the top and will float off through suitable outlets. It will usually take 30 or 40 min. for the water to clear up. After this, cold water is turned on and run until the goods are cooled. This will take about 10 min. The water is then let down to dyeing level and the goods are left in the kettle ready for dyeing.

Dyeing Light Colors

The dyeing of rayon fabrics to be used for women's undergarments is generally carried out with direct colors. The shades are very light, such as flesh, peach, and orchid. The dyebath is made up with the required amount of color and glaubersalt, and is run at a temperature of about 120 deg. F. The actual time required for dyeing these light shades is very short. A batch of goods can be matched off in half an hour. A six-string kettle that will hold twelve pieces, or 160 lbs., is a convenient size to use. The pieces are run two in a string. After dyeing, the goods are extracted and examined for stains, etc., after which they are ready for drying.

Drying and Calendering

Such goods are knitted wrong side out, and therefore must be turned before they are dried. Upright dryers are used with spreaders, according to the width of cloth desired. In drying, the temperature is maintained at about 100 deg. F. The writer has found that by drying at this low temperature the fabric will be very soft and lofty. Too much heat has a tendency to make the cloth harsh and rasp.

After drying, the goods are run over a calender and given a good steaming to improve their softness. The calender rolls should be far enough away from the steam jets so that they will not heat up too much. It is best to run the cloth through the calender with the rolls just warm from the heat picked up from the steam. The cooler the cloth is treated after it comes from the dyeing, the better the finish will be in every respect.

Franklin Rayon Dyeing Co., Providence, R. I.

A New Departure in Rayon Dyeing

Franklin Rayon Dyeing Company, Providence, R. I., Will Dye Rayon in Wound Form

THE Franklin Rayon Dyeing Company, incorporated in Providence on July 21, 1926, has purchased the property of Geo. E. Boyden & Son, 86 Crary Street, and is just starting operations with a capacity of 20,000 lbs. per week, dyeing rayon in wound form.

The principle of dyeing used by this company is similar to that used in regular Franklin process yarn dyeing machines, but certain changes and refinements have been made that required the building of special equipment. The new machines are to be manufactured only for the use of the Franklin Rayon Dyeing Co. and will not be sold.

The two principal sources of trouble in making rayon fabrics have been shiners and broken filaments. The Franklin Rayon Dyeing Co. claim that their method of handling rayon eliminates shiners, provided of course the shiners are not created before the rayon enters their plant. They also state that their process has less tendency to break the filaments of the yarn, due to the fact that the rayon is skein-spooled before dyeing, instead of after, and being in the wound form during the dyeing, the rayon is not tangled or disturbed. Another advantage claimed for this new method is a net saving in winding costs.

As with other plants using the Franklin process principle of dyeing, this company will be able to handle large quantities of material in a comparatively small space. While the dyehouse will have an initial capacity of only 20,000 lbs. per week, provisions have been made for quick expansion if conditions demand it. It is reported that the Franklin Rayon Dyeing Co. will have a separate sales organization, although salesmen of the Franklin Process Co. will accept rayon dyeing orders as a matter of accommodation. The new company has organized with the following officers: E. S. Graves, president; H. D. Evans, vice-president; W. A. Traver, treasurer; A. N. Dana, secretary; and L. T. Brown, general manager.

Less German Rayon Imports

WASHINGTON, D. C.—German imports of rayon declined from 986 metric tons, valued at 14,155,000 marks, during the first six months of 1925 to 904 tons, worth 8,513,000 marks, during the first half of the current year, reports Vice Consul Durward Grinstead, at Dresden. Of this year's imports 98.6% were in the undyed state. Italy, Belgium, Switzerland and Czechoslovakia were the principal suppliers.

Exports of rayon from Germany decreased to 1,718 tons, valued at 15,337,000 marks, during the first half of the year, from 1,851 tons in the first six months of last year.

The United States continues to be Germany's best customer, taking about one-third of total exports, with Switzerland and Czechoslovakia next in order.

Balkan Plant Completed

The Soc. Anonyme de Soie Artificielle, registered last April, built the first rayon factory in the Balkans. It is an undertaking of Greek and French interests, with a capital of 7,000,000 drachme. Of this sum, 3,500,000 drachme has been utilized for the provision of machinery, the greater part of which was produced in Germany. Their production of rayon at the commencement is to be 600 kilos, and at the end of the year it is to be increased to 1,000 kilos. At present there is no possibility of employing rayon yarn in Greece, but the company intends to export its production to Italy and Egypt. (*Manchester Guardian Commercial*).

Distinguishing Viscose from Cuprammonium*

Description of Test Developed at United States Bureau of Standards in Washington—Based on Probability of Finding Inherent Impurities in Viscose Rayon That Are Not Normally Present in Cuprammonium Rayon

By W. T. Schreiber and H. A. Hamm

THE present tremendous production and consumption of all types of rayon make it very desirable for the textile man to be able to identify these types with ease, speed, and accuracy.

Conclusive tests for the acetate and nitrocellulose types are fairly well established and are proving to be entirely satisfactory. The acetate type is soluble in acetic acid and in acetone; this is not true of the regenerated rayons—nitrocellulose, viscose, and cuprammonium. The nitrocellulose type may be identified by the distinctive dark blue color to which it changes when treated with a sulphuric acid solution of diphenylamine.

A simple and satisfactory test that will differentiate between the viscose and cuprammonium types has not as yet been generally accepted or approved by the rayon industry. The large increase in the importation and the prophesied increased domestic production of cuprammonium rayon have brought the question of a satisfactory method of distinguishing between viscose and cuprammonium to the foreground.

In view of these facts, a study was made at the U. S. Bureau of Standards to develop a satisfactory test. Although positive results were of primary importance, attention was also directed toward developments requiring a minimum of technique and of time.

Finding Inherent Impurities

The probability of finding inherent impurities in viscose rayon that are not normally present in cuprammonium rayon appeared promising. This premise opens up a field of possibilities that has apparently been neglected. There are several distinctive impurities that may be retained in the finished viscose rayon—namely:

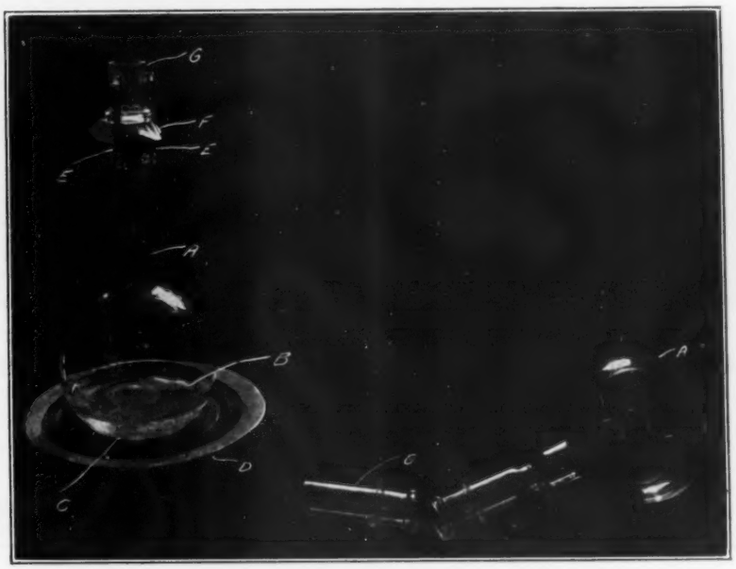
1. Cellulose xanthate
2. Sodium thiocarbonate and alkali sulphides

It was reasonably assumed that if any cellulose xanthate or compound of like nature is present it should be possible to decompose it and obtain a test for carbon disulphide. Also, if sodium thiocarbonate, sodium sulphide, or similar sulphur compounds are present in the viscose rayon, an acid treatment should liberate hydrogen sulphide.

An apparatus was therefore set up by which it was possible to heat rayon in water or with an acid and by the use of hydrogen to sweep any decomposition products into or through an absorption train. The media used in the absorption train were, respectively, (1) anhydrous alcohol, (2) anhydrous alcohol saturated with potassium hydroxide.

Viscose rayons were heated with water, normal acetic acid, and normal sulphuric acid, respectively. Tests were made for carbon disulphide in the former absorption medium by using the ammonia cyanate method; in the latter the copper xanthate method was used. Of several tests made in this manner, a very faint test for carbon disulphide was obtained from only one sample of the viscose type. The carbon disulphide test as a distinguishing test for viscose rayon was therefore abandoned.

The apparatus shown in the illustration was set up to detect small amounts of hydrogen sulphide, which might be liberated by the treatment of any sulphur compounds remaining in the viscose. This test was carried out as follows: The rayon (viscose or cuprammonium), together with the reagent, was placed in the diaphragm flask. A piece of filter paper saturated with a 10 per cent solution of lead acetate was placed on the flange of the flask. The flanged surface of the glass tube was placed on top of the filter paper and fastened in place by the use of rubber bands. Thus there was formed a paper diaphragm entirely covering the opening of the flask. The flask was then placed over a moderately boiling steam bath for a definite period, after which the filter paper was removed and the exposed part of the paper observed. A black or brownish stain on the filter paper constituted conclusive proof that hydrogen sulphide had been given off.



Diaphragm Flask for Cuprammonium Viscose Tests: A, main flask; B, rayon; C, reacting liquid; D, steam bath; E, rubber bands; F, filter paper; G, diaphragm tube

The following table gives the color of the filter paper when 5 g of various samples of undyed viscose and cuprammonium rayons had been exposed in the apparatus to three successive 4-hour periods with

Treatment 1. 100 cc distilled water
Treatment 2. 100 cc distilled water plus 3 cc glacial acetic acid
Treatment 3. 100 cc distilled water plus 3 cc glacial acetic acid plus 3 cc concentrated sulphuric acid.

Table I shows that when five grams of viscose rayon and 100 cc of water were heated on a steam bath for a period of four hours, hydrogen sulphide was given off in the case of only four of the samples of viscose rayon. However, when the viscose samples were successively heated for four hours with 100 cc of water containing 3 cc of glacial acetic acid and with 100 cc of water containing 3 cc glacial acetic acid and 3 cc concentrated sulphuric acid (after the initial treatment with 100 cc of water), the table shows that hydrogen sulphide was given off from every sample of viscose rayon: whereas cuprammonium rayons when similarly treated with water and with acids, gave no test for hydrogen sulphide.

The previous method covered a test period of 12 hours, which is rather long. Further work, however, showed that a single 4-hour exposure of the rayon with 100 cc of water and 3 cc of concentrated sulphuric acid gave results comparable and similar to those listed in the table under treatment 3. This method proved sufficient to identify all of the available viscose and cuprammonium rayons with certainty.

TABLE I.—DIFFERENTIATION RESULTS

TYPE OF RAYON (Undyed)		Color of Filter Paper		
		After treatment 1	After treatment 2	After treatment 3
Viscose	I	Blank	Light brown	Dark brown
	II	Light brown	Dark brown	Black
	III	Blank	Dark brown	Black
	IV	Blank	Light brown	Light brown
	V	Blank	Light brown	Dark brown
	VI	Blank	Light brown	Light brown
	VII	Light brown	Dark brown	Brown black
	VIII	Blank	Light brown	Dark brown
	IX	Blank	Light brown	Light brown
	X	Light brown	Black	Black
	XI	Very light brown.	Dark brown	Black
	XII	Blank	Light brown	Dark brown
	XIII	Blank	Light brown	Dark brown
Cuprammonium	I	Blank	Blank	Blank
	II	Blank	Blank	Blank
	II	Blank	Blank	Blank
	IV	Blank	Blank	Blank
	V	Blank	Blank	Blank

Method of Test

It is therefore proposed that the following method be used for differentiating between viscose and cuprammonium rayons.

Place 5 g of the unknown sample of rayon (viscose or cuprammonium), together with 100 cc of water and 3 cc of concentrated sulphuric acid, in the diaphragm flask previously described; then place the flask over a moderately boiling steam bath for four hours. If at the end of this period the exposed part of the lead acetate paper becomes stained with a brown or black color, the rayon is viscose rayon; if no coloration is obtained the sample is cuprammonium rayon.

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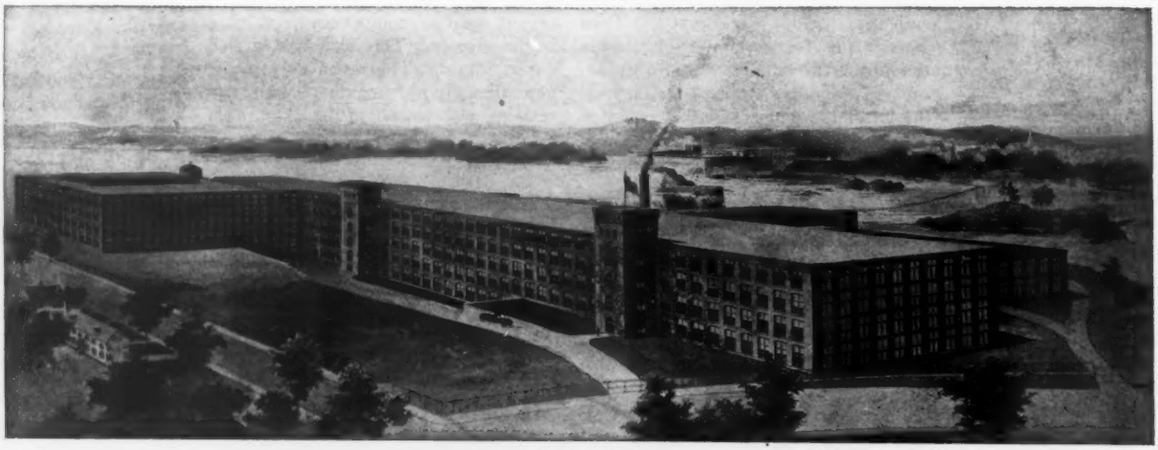

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In This Issue

IN the fourth article of a series entitled "Scientific Management Applied to Throwing," Warren P. Seem answers a multitude of questions frequently in the minds of manufacturers. These include the following: How may the efficiency of the help be improved? How much should be expected of them? What consideration should be given requests for absence? Is a nurse a profitable investment? How should vacations be allotted? Are welfare organizations of practical value? Should sick and death benefits be paid by employers or employes? The solutions of these and other problems are considered carefully, and many suggestions are offered.

IN the chart for determining the dram weight of worsted roving required for a given yarn, which is published in this issue, Brompton claims to have introduced a new use for logarithmic cross-section paper. He believes that considerable benefit would be derived from a more extended application of this drafting medium in textile calculations. Mill men are always glad to have computations reduced to such a convenient form, and all mathematicians who labor to present similar work in other branches of the industry may feel assured that their efforts will be appreciated.

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See Page 176 for Announcement of Textile Directories

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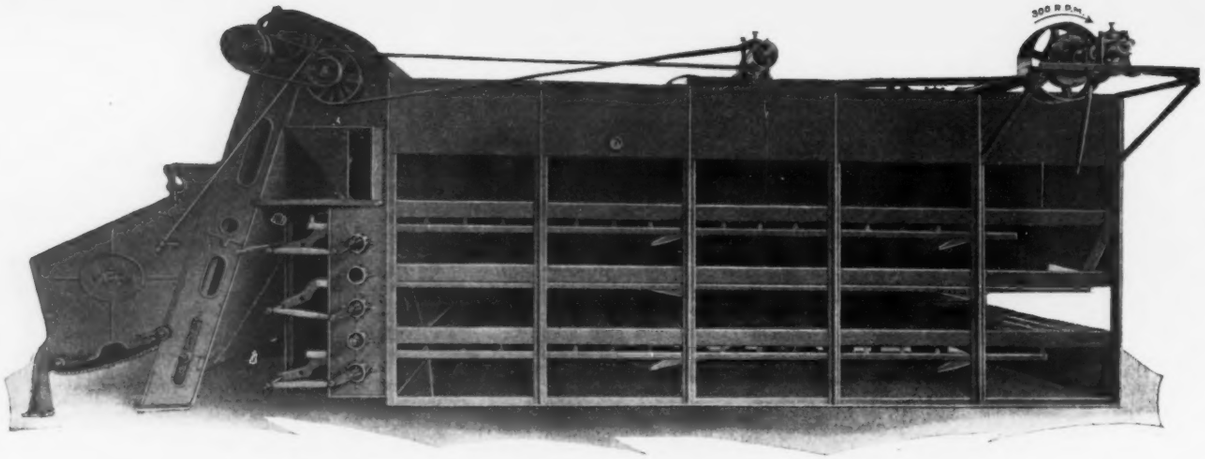

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TEXTILES and POSSELT'S TEXTILE JOURNAL

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Scientific Management Applied to Throwing

How Contentment May Be Afforded the Worker by the Application of Various Common Principles, With Benefit to the Firm—Is a Nurse Necessary for Guarding Health of Employes?—How Vacations Should Be Arranged—Welfare Organizations—Sickness and Death Benefits

*By Warren P. Seem**

The efficiency of employes depends in large measure upon the degree of contentment they are able to derive from the policies of the management. Various common principles, when understood and applied, can aid materially in raising the workers' morale. Of these principles, the first to be discussed by Mr. Seem in the accompanying article, which is the fourth of his series on management in the silk throwing industry, is the sensation of achievement. Let the workers know, he suggests, "that in piecing up ends or doffing bobbins they are making the thread, a very vital part of the beautiful fabric seen in finished hosiery and garments." Other principles involve the reaction of employes to a fair deal, the exacting of a fair deal from them in return (by which the possibilities of steady employment are increased), the promotion of health, the psychological effect of vacations, and the reaction toward welfare organizations.

TWO men were viewing a sky scraper in New York City. Said one to the other, "I helped to build that building." "Were you the boss carpenter, or perhaps the boss mason or chief engineer?" "No," said the other, "I was a hod carrier." This incident illustrates the first principle upon which we will endeavor to find a way to bring happiness to the winder, spinner, doubler, etc., in a throwing plant; that is, by showing them that in piecing up ends or doffing bobbins they are making the thread, a very vital part of the beautiful fabric seen in finished hosiery and garments that adorn the woman of this age.

I have found that, when defects in hosiery and garments are shown to the female workers, they are touched with a sense of regret at the results of their carelessness, and that, instead of resenting and obstructing efforts at correction, they respond heartily, and show by their cooperation that they appreciate the vital part they have to perform. They realize that their work must be done well, and they find contentment in the achievement of a beautiful and perfect fabric.

The first principle is the *knowledge of achievement.*

Fair Deal

The second principle will be found in giving happiness to our workers and giving them a *fair deal.* There is a tendency among mill workers to feel that someone is always trying to put something over on them by taking advantages in fixing piece work rates or by cheating them in making up their pays. They dread iron-clad rules, and this causes a feeling of duress, which breeds a nervous and restless spirit and resentment which sometimes breaks out in a united demand and protest for relief.

To give a fair deal the foreman and superintendent cannot play the good fellow to the "good lookers" and the favorites in the plant, as that creates envy and jealousy among the unfortunate ones. Familiarity breeds contempt, and just as soon as a man becomes too familiar with his female employes he loses their respect, and they will court all the favors they can hope to receive.

Character in forepeople and mill superintendents counts a great deal in acquiring respect. One must get the other party's point of view and the motive in back of his or her actions, if one hopes to give a fair deal and avoid much unhappiness.

A good manager, however, will not only give a fair deal but will also demand it from others. Emerson says that the expression, "It is more blessed to give than to receive" is not impractical religious sentiment but the higher form of efficiency teaching, that what one most needs is the fair deal for oneself, and that the best way to secure it is always to give it. We may pay out a thousand cents in little fair-deal acts and apparently never receive any return, but suddenly one of those cents which has been drawing compound interest will come back as a twenty dollar gold piece.

He tells the story of a manufacturer whose heart was too big and tender and whose common sense was eclipsed by his sympathies. His factory was full of what his men called charity patients; men and women were kept on the pay roll because they could tell an artistic "hard luck story." Wages were based, not on efficiency, but on the eloquence and pathos of requests for increases. Workers came and went about as they chose; every operation was timed to slow speed lest the unfortunate ones should fall behind and overdo themselves, and no strict account was kept of material because it seemed to hurt employes' feelings to be questioned too closely about it.

This kindly, well-meaning man was not loved by those he thought he benefited, but they held him in good-natured contempt — and robbed him generously and cheerfully. His receivers paid creditors fifteen cents on the dollar.

To give our employes a fair deal we must give them steady employment.

Steady Employment

If we hope to hold our help, we must give them steady employment. One of the great trials of a commission throwster is that his supply of raw stock is too often subject to delays over which he has no control. He must therefore let his help go for a day or more and then work them overtime to make deliveries.

The principal causes that bring about this condition are the following:

First, the great distance to the primary market of our raw supply.

Second, holding off in making contracts for raw stock in a dropping market.

Third, too great fluctuations in the price of raw silk.

Fourth, lack of a standard classification, causing rejections and delays in replacements.

Fifth, indifference on the part of the manufacturer, and tardiness in sending a fresh supply.

Sixth, spot business.

The increasing demand for thrown silk at call has produced a trade of considerable proportions in thrown silk. As the seller of thrown silk must take chances on the market, stand the waste made, and the interest on the stock carried, he must ask a higher price. This is partly covered by selling silk on delivered weight, which includes the soaking gain.

This method also enables the throwster to keep his help employed steadily, and he therefore can maintain a higher efficiency of costs and quality of thread.

As we pay a higher price for promptness in railroad service and other accommodations, it is only fair to the throwster who is called upon to keep his organization in shape to give prompt services, that he may be rewarded for such services.

Health of the Worker

The third principle in giving happiness to employes to promote greater efficiency is found in seeking ways to promote the health of the workers.

One of the perplexing problems of a mill forelady and superintendent is to pass upon a request for a sick leave when the department is pressed for work, and when an absence will make it necessary to lay off other help who depend on the work and will affect the production. I plead guilty of prevailing upon help to stick it out and afterwards find an occasional one who has been taken to bed with serious sickness for many weeks, much to my remorse.

Those accustomed to mill life will, however, not judge the boss too severely, as they possibly remember that they have been too frequently fooled by girls who feigned sickness to get an afternoon off, go joy riding, or partake in other pleasures. It is considerable of a problem for a man or woman not skilled in the medical profession to judge when a girl is really sick or only feigning sick. I welcomed the day when it became possible to engage a nurse who

* Superintendent of Throwing and Director of Laboratory of Julius Kayser & Co. Previous articles of this series appeared July 17, Aug. 14, and Sept. 11, 1926.

might pass judgment on all requests for absence on account of sickness.

Does the increased attendance and production per operative justify the expense of a nurse? I have no exact figure to offer, before or after, as conditions were so different that it was impossible to make a true comparison. However, when the help are encouraged to see the nurse at the beginning of a cold or other incipient disease, I have seen chronic absentees, whose health was indifferent, restored to good health and regular attendance. Years ago I have seen a cold start in a department and eventually affect the majority of the force before it run its course.

Spraying disinfectants on the floors and timely suggestions to the help during epidemics of cold and grippe are very helpful and profitable. I am thoroughly convinced that a trained nurse in a fair-sized factory can be made to pay good dividends by reducing the turnover in help, by advising all new help, by reducing the number of absentees through preventative methods, and also by creating a more happy and contented worker. A half sick employe is sometimes a very troublesome and cranky one. In small factories, one of the foreladies or a member of the office force could be trained to give first aid treatment under the advice of a physician.

Must Prevent Sickness

The medical profession is striving more and more to prevent sickness among its patients, rather than to allow them to become sick and then cure them. Only when this principle is carried out in a mill organization will a nurse be a profitable investment. A factory nurse must familiarize and adjust her actions to factory conditions and recognize that her salary as well as that of the other workers is found in a full production, and that those given first aid treatment should be sent back to work whenever possible. She must not cater to all the whims and slight aches that young people are subject to.

The need of proper first aid treatment is illustrated by two experiences, one of them occurring during my early mill experience as office chief. A young woman fainted in the mill and was carried to the office, where we gave her a dose of whiskey to revive her. After she had recovered we sent her home for the day. The next day she fainted again, and we treated her the same way. The following day she fainted the third time, but her color was too good and aroused suspicion. A consulation was held, her character inquired into, and upon the information obtained the assistant superintendent said he would administer an old-time cure. He took a towel, wet it under the spigot and slapped the girl across the face. That revived her very quickly and proved a sure cure, as she never fainted again. The second case is that of an assistant foreman who took sick. His superior sent to the drug store and got a "cure all" that came near proving fatal.

The most frequent complaint heard from the girls after being in the mill a few days is that they get too tired and that their limbs ache all over. Investigation showed that it is mostly the girls who wear high-heeled shoes at work that complain, and that when we can persuade them to change to low-heeled and comfortable shoes, when they arrive at the mill, they do not become over-fatigued.

Poor Sight

A number of singles were discovered in spinning two threads. They were traced back to a 5B hand who was found to have only 50% eyesight. She was given a leave of absence to get glasses and on return never had another single. Other help were examined by a specialist and a surprising number were found with only from 70 to 80% vision. Some of them complained of constant headaches, others of nervousness — all of which was found to be due to eye strain, and was overcome with proper glasses.

Vacations

Twenty to twenty-five years ago, very few mill hands took vacations, partly because work was scarce then and those who had to work feared to be absent any length of time lest they lose their jobs. Besides, those who went to work needed the money for a livelihood, and, as their pay was only from $1.50 to $5.00 per week, they had very little to spare. Then only the superintendent and managers took vacations. Eventually the full-time workers, such as office help, foreman and foreladies, were given a week's vacation with full pay. Later, this was extended to ten days, and now two weeks appear to be the rule.

Gradually the help began to ask for vacations, and at first when business was good these requests were granted, provided the applicants brought in other hands to fill their places while they were away. When business was poor, the help were urged to take a week or two off and leave what work was to be had for those who were dependent on the work for a living. In small cities and towns it is surprising how magnanimous some of the help were when they found out the actual needs of their fellow workers.

When the supply of help became scarcer in the states where they have only nine months' school, we started to take on learners the first week of school vacation, making a schedule of dates when different help wanted vacations, and preparing others to take their place. The first year our costs for teaching learners were excessive, but in the following years we got back many of those who had worked before, and the plan worked out without much loss in production.

Objections to Closing Plant

When manufacturers do their own throwing and can govern their raw silk supply and use, it is practical to close down the whole plant and all take a vacation at the same time. The objections I find to this plan are:

(1) The loss in production can never be made up.

(2) It is very unsatisfactory to the help, as young people generally want to join their parents during vacation time and the parents cannot always arrange their vacation when their children are free. This results frequently in the help receiving two vacations. If one refuses them the second vacation, they simply stay away; and, when they come back, one has the choice of giving them work again and building up production promptly, or of taking on learners and waiting several months before they become skilled, at a heavy additional cost to run the department.

(3) At this time, about 70% of the help take vacations. The others prefer to work, because it means a privation to them to lose their pay. When a general vacation is granted, the latter frequently go elsewhere to obtain work; and, if they like it, they do not return. The loss, however, is not any greater than when the help take vacations at their own convenience.

Young people like change of scene, and they often take the opportunity when off on a vacation to try other jobs and stay if they suit them. The effect of vacations on young people is very noticeable in their production per operator and morale.

Following vacations one finds a marked increase in the production per hand. They are more amenable to discipline, and the morale is decidedly better. This appears to hold up until the Christmas holidays, and it is partly stimulated by the desire to earn all possible for Christmas buying. The week before Christmas and the week following Christmas are generally low in efficiency, due to apparent reasons. The efficiency then starts to increase and gradually reaches its height in March, April and May. During the month of June it starts to lag, and reaches its lowest level during the month of August. The psychological time then to take vacations appears to be during the month of August.

Welfare Organizations

To what extent do welfare organizations help to break up the monotony of mill life and add to the contentment and efficiency of mill workers?

At mill F the ladies of the city organized a civic club, and decided to help the factory girls. They first proposed to have one or more of their number teach them common school studies, but were very much surprised to learn that a number of the girls were high school graduates, and that all had a common school education. It was found that many of the girls were working only to furnish a "hope chest," or in order to dress better, and that they were eager to learn etiquette, fancy sewing, millinery, and dressmaking. They organized classes of that kind, had a large attendance, and closed the first season with a very successful bazaar.

Eventually it developed into a Y. W. C. A. The mingling of the factory workers with the society women of the city gave both an entirely different impression of each other. This had an excellent effect in the mill and community.

Successful Associations

When I became associated with the Julius Kayser Co. at Brooklyn, N. Y., I found a welfare organization that had been in existence for thirty years, and a ladies auxiliary that had been giving relief to its fellow workers sixteen years. The welfare organization provides sick and death benefits, and conducts social activities, such as dances, entertainments, and excursions desired by its members. The funds of the organization are secured from monthly dues of 30c per member, contributions, and earnings through excursions and social affairs.

The sick benefits are: first week, nothing; second, third, and fourth weeks, $8 per week; fifth, sixth, seventh, and eighth weeks, $10.00 per week. No benefits are paid for more than eight weeks in any one year except in very needy cases. The death benefits are $100, secured by an assessment of the members. The association provides a doctor and his services are free to all its members. The officers serve without pay. The association physician is paid a nominal salary. The company provides a nurse during working hours, and a physician daily except on Saturday. A modern cafeteria is conducted, and lunch is served at cost. A retail store serves employes with Julius Kayser's products at reduced prices.

The ladies auxiliary investigates cases of employes in distress, and gives relief to worthy members. On Thanksgiving and Christmas they send out dinners to needy families, and furnish food, clothing and flowers, as circumstances suggest. They receive their funds from voluntary contributions, entertainments, etc.

For one knowing the needs of his help and having their welfare at heart, it is very gratifying to pass on to a faithful employe, during illness, eight to ten dollars per week, particularly when one knows that it is the only source of income the employe has. Such organizations replace the humanitarian service given in the days of small factories by the owners, who knew their help individually and personally contributed to their needs.

Operation Satisfactory

As I have had the privilege of serving a number of years as a director and officer of the Julius Kayser Welfare Organization, and as such have been able to study the inside workings of the organization very closely, I am pleased to say that I have only the higher words of commendation to express.

I have observed that, as the help pay for all the benefits received, they do not consider themselves subjects of charity, when receiving sick benefits, but only as receiving a return on their investment of 30c per month in a mutual sick benefit organization. It creates a sympathetic feeling among the help that increases the morale of the group. As to the effect on the loyalty of the help to the company, I

would say that anything that builds morale also increases loyalty.

The question, however, the wisdom of having minor executives dependent entirely on an employes' organization for relief during illness, as that may tend towards loyalty to the help rather than to the company.

The welfare organization obviates occasional collection for sick and needy workers, and was originally organized to overcome this practice.

Should Owner Contribute?

Should the owner contribute toward sickness and death benefits when due to natural causes, and if so to what extent, or should these benefits be strictly controlled and supported by the employes?

Let us analyze the various factors bearing on this subject that appear in the throwing industry before I answer these questions. In large plants we find practically all of them in one mill, in small plants only some of them appear.

A. Throwsters as a rule employ principally girls and young women, the average service being from three to five years.

B. Throwsters, as in most all industries, pass on to operators the loss of time due to sickness, vacations, slack periods, and other causes.

C. While the average time of service is only from three to five years, there are a number who serve as teachers, become the pace makers, and remain and give ten to twenty years of good service. If a company contributes to the general fund, and sick benefits are paid to the sick and unfortunate ones who may give only a few years of service, it appears unfair not to do something for the old, faithful, and loyal employes who seldom become sick, and whose services make possible whatever profits are earned. It actually puts a premium on becoming sick and taking a few weeks off at part pay.

D. As the throwing industry generally employs the cheapest labor in the community, it obtains a large part of its help from the laboring class, who live closer to actual want and sacrifice than do the workers in most other industries employing girls and young women. This class, by reason of environments, often stay with the throwster the longest. As they work side by side with others who only work for pin money in order that they may either fill in idle time waiting for a chance of another position, buy a hope chest and marry, earn money for a higher education, or take a coveted trip, any welfare work in a throwing plant presents a complex problem. Yet, if the employer extends the time of welfare service beyond, say, three years of service, it simplifies things and eliminates the undeserving class.

There are several classes of help that a superintendent who is concerned about the welfare of his help desires to reward. These are as follows:

First: Those who are thoroughly loyal or refuse offers at seasonal work for higher pay, or those who inform the executive of labor trouble and act as peace-makers.

Second: Those who show initiative and suggest methods of improving the work, cheapening the cost, or increasing the production.

Third: Those who are inherently honest and those who are always on time and regular in attendance.

Fourth: Those, who because of illness in the family, become financially embarrassed and need financial help at a reasonable rate of interest or a loan with the privilege of paying it back in installments so as to avoid the usury of loan sharks.

Fifth: The pace-makers and teachers who, because there is no vacancy at higher positions, remain in the operating class.

Necessity and Benefit

Is welfare work necessary, and does the company profit by it?

My finding is that the need of welfare work in large organizations is greater than in small plants, because in the small plants the chief executive is more or less in personal touch with the help, considers their needs and requests promptly, pays them according to a mutual agreement for services rendered, frequently grants accommodations, and gives perquisites.

In large organizations, it becomes necessary to avoid favorites, limit the salary and wages, and keep after department heads to maintain efficiency. Cost sheets and production reports are studied very closely, rules and regulations that must be observed are more numerous, and there is a tendency for the minor executive to become formal and devoid of sympathy. When a problem arises, these executives apply the rule and do not always exercise common sense. Wage adjustments and allowances frequently must go through a line of minor executives. As this is sometimes done in a perfunctory manner, and furthermore as the changes are frequently not allowed, or are delayed, an acute situation is often created, and valuable help are lost.

We frequently hear the phrase "Corporations have no souls," and it appears necessary to put the "soul" back into our large organizations if one hopes to succeed in large industrial centers.

My firm conviction is, after seeing the benefits and appreciation of welfare work in different forms during a period of eight years, that it is not maudlin sentiment, but, when properly administered and given for specific services it can be made to produce an excellent morale, increase efficiency, and secure conscientious service, which means good work and more steady business at less cost through a decreased turn-over in help.

Experience proves that something given for nothing, or gratuities, are not, as a rule, appreciated enough to warrant welfare work. One must not, however, let the acts of malingerers, ungrateful help, and those desiring easy money dominate our actions, as these employes hardly represent 5% of the help. We must investigate the other side and see the joy, happiness, and comfort that may be given to deserving employes and the loyalty promoted by considering the welfare services to the help.

In my judgment an employers' welfare service should be conducted distinctly separate from that of an employes' welfare organization, and the employes should be rated on years of service, loyalty, productive capacity, attendance, punctuality, and quality of work on a cumulative plan upon which the help can draw as desired.

The welfare services that may be given are benefits, in case of sickness or death; part or full time pay during vacations; the privilege of securing loans at a low rate of interest; the services of a doctor and nurse at nominal rates; lunches at cost; and pensions at a retiring age. When the throwing department is part of a manufacturing organization, there might be added the privilege of purchasing the product at reduced prices.

To get the full benefit of welfare service it cannot be given in lieu of wages. I desire, however, to emphasize the fact that large organizations working on standard products cannot maintain the peak wage rates paid by seasonal employers; but, where the help are offered steady work at a fair wage rate prevailing in the community, and then to this is added a welfare service, one can expect a hearty reaction from 95% of the help. *(To be continued)*

Claflin's to Liquidate Business

Directors Decide to Wind Up Company's Affairs Upon Approval of Stockholders

A MEETING of the stockholders of Claflin's, Inc. has been called in the near future to ratify the recommendation of the directors to liquidate the business of the company. This recommendation was made at a directors' meeting held last Friday, and if ratification is made by the stockholders the process of liquidation will start December 1.

It is understood that all orders already booked will be filled and that purchases made in the primary market will be fully honored.

The following statement announcing the decision of the board of directors was issued last week:

"At a meeting of the directors of Claflin's Incorporated held today it was unanimously recommended that the corporation be liquidated at such time as the officers and directors may decide is proper to take action.

"President Bonties, who has so successfully operated this business during the past 12 years, stated that there was a general shrinkage in the business done by this corporation and that a careful survey of the situation made during the past three years convinced him that Claflin's Incorporated, as it is constituted today, cannot compete in the New York market with concerns who specialize in the various lines.

"A meeting of the stockholders has, therefore, been called for the purpose of acting on the recommendation of the directors."

The house of Claflin was established in 1843 by Horace B. Claflin who with William H. Buckley began business at 46 Cedar St. under the style of Buckley & Claflin. A store was built at 57 Broadway in 1850 and the firm name changed in 1851 to Claflin, Mellon & Co, upon the retirement of Mr. Buckley. In 1853 another store was erected at 111 Broadway, the present site of the Trinity Building. The removal to Church & Worth St. was made in 1861 and in 1864 upon the retirement of Mr. Mellon the business was conducted under the name of H. B. Claflin & Co. Mr. Claflin died in 1885.

The Claflin failure in 1914 resulted in a receivership and the final purchase of the company from the Mercantile Stores Co., a concern organized by the receivers to conduct the business. This purchase was made in 1917 and the receivers, Fred Julliard and Mr. Martindale of the Chemical Bank, were instrumental in persuading H. B. Bonties, of Bonties, Barnhardt & Schultz, to head the business. It finally became apparent to merchandise creditors that their security would be enhanced by taking over the concern and as a consequence the company under its present name of Claflin's, Inc., has been conducted by directors largely composed of drygoods commission merchants. The directors are J. P. Stevens, of J. P. Stevens & Co., chairman; Harry P. Bonties; F. K. Rupprecht, of the Consolidated Selling Co.; Bertram H. Borden, of M. C. D. Borden & Sons, Inc.; Eustis L. Hopkins, of Bliss, Fabyan & Co.; David W. Jarvis, of Jarvis, Loomis & Dunbar, selling agents of the Amoskeag Mfg. Co.; Ridley Watts, of Ridley Watts & Co.; W. F. Adam, of the American Bleached Goods Co.; John C. Wood; John D. Scully, and Arthur G. Lake. Officers are: H. P. Bonties, president; John C. Wood, Arthur G. Lake and John D. Scully, vice-presidents; Charles Van Riper, secretary and treasurer, and G. W. Aachte, assistant treasurer.

Under this management the business since its reorganization has been carried on in a profitable and conservative manner, but the directors have apparently come to the conclusion that the ability of large retailers to buy direct from mill representatives, converters, etc., at prices which a house such as Claflin's, carrying a multiplicity of lines could not possibly meet, means a constant shrinkage in volume which in the interest of stockholders they did not care to face.

It is stated that the company will liquidate on the right side of the ledger. Stocks are moderate and are said to be well assorted, with little that is old or unsaleable.

The Use of Color in Selling

Vibration or Scintillating of Color a Vital Factor—If Color Schemes Fail to Register, Try Vibration—Iridescence of Color and Texture in Fabrics—United States Taking Leadership in Design and Color From Paris

*By Grace W. Ripley**

PEOPLE buy or refuse to buy according to their feelings, but their feelings can be shaped to a large extent by the proper use of color. There are certain psychological reactions in color upon which the salesman can count in dealing with a large number of people. Once he realizes it and takes advantage of this truth, he lays hold of a powerful selling force. You can make people do things through the influence of color.

Today is incalculably more colorful than yesterday. Color is in the hands of the buying public. Color is loved and understood as never before. To be up-to-date in color is to be thoroughly alive. The use of cosmetics is practically universal. The "hick" customer has disappeared and the drab characters which formed a large part of the population of New England and other northern sections are no more. Old ladies are abolished. Men are heading into color. New textures, new scintillation, new subtleties of color appear daily. Business interests must be one jump ahead of the public.

The business man must be alive to the newest trend. The greatest losses will be through the miscalculation of color trend. The salesperson who is color-dumb will no longer suffice. There must be fresh intelligence in display, great wisdom in buying, correct appeal in advertising, and real knowledge on the part of the salesperson. The woman buyer knows what an asset correct color is to her, but she also knows that it is a different thing to achieve and she grasps eagerly at intelligent help. Color services in stores are overrun, however inadequate they may be. A new and pratical scheme will be welcomed by all buyers and merchants.

Style and fashion are often confused. Style is an accepted canon of taste. It can never be unbalanced or ridiculous. A dress which once had style will always have style. If one laughs at a costume it is not because it is out of style, but because it never had style. One does not laugh at Greek dress of the Ionic period. It is not in fashion, but it still has style. Fashion is the caprice of the moment and may or may not have style. It must be recognized by all commercial interests, but style is always reverently studied.

The human source of our fashions in color is Paris. In Charlemagne's time, the 8th century, Paris gained supremacy in matters pertaining to personal adornment. She has never lost it though great cataclysms such as war obliterate for a moment human interest in aesthetics.

However, Americans are gradually breaking away from the obedient following of everything French in design and color. At last the slogan "American Genius in Design is Good Enough for Americans," is so strongly felt that in many circles it is not considered quite the thing to specialize in French things to the detriment and discouragement of American talent. The debt we owe to France we will always recognize, but we will realize that creative genius is an unquenchable and universal thing. Only yesterday a woman of wealth and social position who keeps in constant touch with Paris and who has bought almost all of her clothes there came to me saying, "We Americans are no longer going to be led by Paris—I want you to work out my fall wardrobe and make it beautiful in color and line and style and individuality." And she added, "I am tired of mere fashion."

In selling color to the public I have discovered that the important thing is to know the characteristics of colors. For instance there are five important reds in dyes with distinct characteristics. It is jumbling these reds which gives the most pain to the public. Storekeepers should keep colors belonging to different families separate except when they are combined with great care.

There are three essential blues, two essential yellows, one orange, one green, one violet. With these members of the dye family all colors may be approximated. When the color theory is completed, one discovers that there are four instead of three of the commonly discovered dimensions of color. There are hue value and intensity, and then there is scintillation or vibration, a trump card with the public.

In nature, iridescence of texture is so a part of color that one cannot think of them separately. One must play safe with color and stick to basic color loves, except when one wishes to startle the public and attract by making a sensation.

Miss Grace W. Ripley, the author of this article, modestly describes her profession and avocation as colorist, or expert in the use of color, but the range of her knowledge is much broader and is particularly notable in its grasp of costume design, style and fashion.

Furthermore she believes that United States genius in design and color is great enough to break away from the dominance of Paris. To "Made in U. S. A." she would add "American Genius in Design and Color is Good Enough for Americans."

She believes that textile manufacturers have but scratched the surface of possibilities of beauty in fabric texture and color combinations. Before she dies she expects to see "fabrics as beautiful as the petals of flowers, holding an actual iridescence of color."

Green is usually restful, and nonstimulating. It is difficult to hold the spotlight with green. Only by vibration can green hold the center of the stage.

Association of ideas and superstitions are very strong factors in the popularity of colors. The peacock is on the black list with women, except those who have too much mentality to yield to foolish whims. The wise merchant, however, will make himself intelligent as to all superstitions, whims, and influences which affect the buyer. The most successful merchants are those with knowledge of mankind. Competition makes ignorance dangerous.

Blue has always been New England's best bet. Blue blood, Heaven, lofty ideas, are all typified by blue. The only negative significance is that of coldness and night. Blue for dignity and aristocracy, rose for love; an ideal combination for a perfect lady. There are fewer perfect ladies today than there were before the war. See the Mauve Decade. Therefore, they are not wearing as many blue dresses. Color trends have made a remarkable change since 1914, but still blue in dress is an ever-present factor. Fewer mistakes are made in blues than in any other color.

Violet, prince, wisteria is very strong this year. There is a thought of sadness there except when a positive and brilliant color is also used. Purple is a color of grandeur, royalty, pomp, and ceremony. It is a color worn by wise old ladies, and clever young ones.

Brown is a color of low vibration, not a lime light color, but beautiful when used with clear bright colors.

Black, since 1890, has been the color of Merry Widows. There is no such color as black except total darkness, which is luckily very rare. Black is a reflecting and scintillating background for color. It is an increasing favorite with discriminating women. Mourning is a lusterless, sad thing, a medieval horror of dullness and despair. I should like to be mourned for in polished Merry Widow attire, but not in true mourning.

The present age is one in which the so-called common people have come into the knowledge which formerly belonged only to the highly educated. All people are now sophisticated in color. They know that cerise and purple, green-blue and purple, and even orange-vermillion and cerise are colors to be worn and enjoyed. Dissonances and discords are popular. There are new colors, jazzy colors, fascinating discords in color, just as there are new dissonances in music. The oriental thought is being fused with the occidental. The Chinese know about the delight of dissonances in color, so did the Prussians, and the Indians since the ninth century.

Orange makes happiness. It should be used in homes and in dress, in small or large quantities. Yellow is a color which is trying to most skins. We can make lamentable mistakes in the use of this color. It is no accident that makes the quarantine flag yellow. A heavy yellow symbolizes disease.

The French persist in sending out a yellow green which few Americans can tolerate. I asked a clever southern woman of what this color reminded her, and she answered: "Baby's second summer." The only thing which permits this color to land in America is the French superstition, which happily is having its last stand. When the superstition is dead, the genius of France will develop to its full stature, and we shall have really magnificent results, based on basic human truth.

Capitalize Vibration

Every rule has exceptions and every color has its intrinsic worth and value in some situation, just as in the new music there are strange rasping noises and shrill shocks which formerly would not have been thought to be musical notes. But dissonances and discords have great value in waking up the audience to the perception of beauty which becomes saccharine when too much harmony and balances are produced. French harmonists instinctively know this and they manage to keep us both interested and irritated.

Rayon has given us a new life and new inspiration, for there is a light catching quality in rayon which gives it priceless artistic value. The rayon fabrics on the stage are a brilliant success. The immense possibilities for

(*Continued on page* 163)

*Address at 13th Annual National Business Conference, Babson Park, Mass.

Worsted Roving Weight and Yarn Count Chart

For Roving, Find Required Count at Side, Trace Horizontal Line to Draft, and Follow Vertical Line to Dram Weight—Selection of Draft Depends on Fiber Length, Oil, Frame and Age of Roving—Allowance Made for Spinning Light

By Brompton

THE accompanying roving weight and yarn count calculator has been designed to provide a ready means for finding the dram weight of roving required for any given count of yarn from 10s to 100s. It is first required that the draft to which the roving is to be subjected in spinning be decided. This usually depends upon the length of the fibers of the material, the presence or absence of oil, the type of frame to be used, and whether the roving is likely to be used new or after resting some time.

The usual method of determining the dram weight of roving required is by written calculation. This is necessary because of the difference between the standard lengths and weights of the roving and yarn. The principles underlying the systems by which the sizes of roving and yarn are designated differ greatly. Roving is referred to as the weight of a definite length, while yarn is referred to as the length of a definite weight.

In expressing the count of the roving, we state the weight in drams per 40 yds. The heavier or thicker the roving, the larger the count. The yarn count is the number of lengths of 560 yds. contained in one pound. In the case of yarn it will be understood that the thicker or heavier the strand, the less the number of standard hanks that will be contained in one pound; therefore, the heavier the yarn, the smaller the count number.

In the graph presented, the horizontal measurement is the dram weight of the roving, while the vertical measurement is the count of the yarn. The graph will be largely used for finding the dram weight of roving when given the count to be spun and the draft to be imposed. The method of using it is, first, to trace the horizontal line representing the count required (where counts are spun 5% light, this should be allowed for) along to the "draft" line coinciding with the draft to be employed in spinning. From the juncture of these two lines, move vertically either up or down. The reading will be the roving weight required.

The following example should make the method clear. Find the dram weight of roving required for spinning 24s count with a draft of 10. From either the left or right hand trace along the horizontal count line until the "draft" line 10 is reached. These cut each other very near to the perpendicular line 7½. This is the roving weight required. Proof: (24x7½)÷18.3=10.

For another example, fine the dram weight of roving required for spinning 48s count (5% light) with a draft of 7. From the left-hand side of the graph, trace along the count line opposite 50½ until the "draft" line 7 is reached. These cut each other near to the perpendicular line 2.5. This is the roving weight required. Proof: (50½x2.5)÷18.3=7.

The graph should prove of especial use to managers and overseers who are called upon to make similar calculations to those shown above.

* * * * * *

A few additional facts may be of interest to those not thoroughly familiar with the calculations referred to above by Brompton.

Ordinarily, when a chart such as the one presented here is not available, it is necessary, in order to determine the roving required, to use the famous "spinning formula." This formula is arranged as follows: (Count of yarn x weight in drams of 40 yds. of roving)÷ draft in spinning = 18.3. The number 18.3 is the dram weight of 40 yds. of 1s yarn, although it is unnecessary to remember this fact in using the formula. Suppose, for example, it is desired to spin a 40s yarn with a draft of 5.5. The roving necessary may be deter-

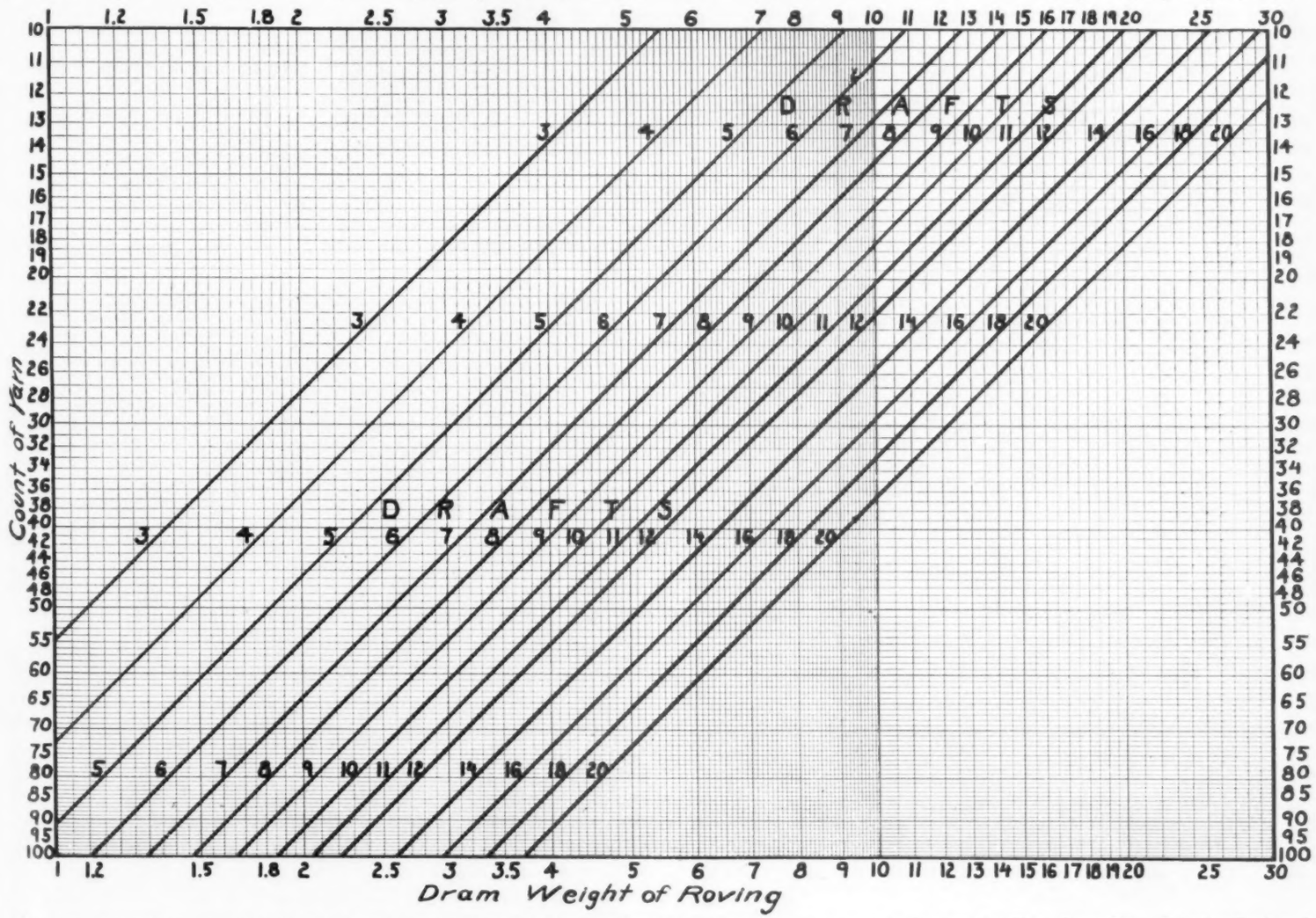


Chart for Determining Dram Weight of Worsted Roving When Spinning Draft and Yarn Count Are Known, or for Determining Yarn Count When Spinning Draft and Roving Weight Are Known

mined by inserting these figures in the spinning formula, as follows: (40 x dram weight) ÷ 5.5 = 18.3. Then, dram weight = (18.3 x 5.5) ÷ 40 = 2.5.

Occasionally, when roving of a certain size is on hand, it is desired to know the count of yarn which can be made from it. This calculation may also be made by means of the spinning formula. Suppose a roving on hand weighs 12 drams per 40 yds., and the necessary draft is 9. Then, (count x 12) ÷ 9 = 18.3; and count = (18.3 x 9) ÷ 12 = 13.75. This figure could also be obtained by the use of Brompton's chart. Find the dram weight at the bottom or top, trace the vertical line to the line denoting the draft required, and trace the horizontal line to the yarn count at either side.

The spinning formula may be converted into convenient form for these specific uses as follows: Dram weight = (18.3 x draft) ÷ yarn count. Yarn count = (18.3 x draft) ÷ dram weight.

—*Editor.*

Shuttleless Loom

Shuttle Replaced by Needle and Hook Arrangement

Further information on the Gabler loom, invented in Germany, is given in the patent issued to Johann Gabler, Ettlingen, Germany (U. S. patent No. 1,515,102). This is a device by which the carrying of the filling thread through the shed on a loom in the production of woven fabrics is accomplished by a rod or needle and a hook arrangement in place of the ordinary shuttle. The principle of this mechanism is given in the article "Shuttleless Loom" which appeared in the Aug. 21 issue of TEXTILE WORLD.

According to this invention, the filling thread is inserted double as far as the center of the shed, by means of a so-called "filling rod," in the end of which is a thread eye. At the center of the shed the pick of filling is taken hold of by the hook device entering the shed from the other side of the loom, as shown at Fig. 2. A cutting mechanism is provided to sever the end connecting this pick to the last preceding one, in order to allow this pick to be drawn across the shed by the hook device. When the hook has reached the outer end of its travel, the lay has beaten up the pick, and the cut end of the pick is still held by the hook (see Fig. 3). When the hook starts across the shed to take the next succeeding filling thread, this cut end is doubled back and beaten in with the next filling thread, forming a double pick in the selvage. There is also a mechanical arrangement which holds the filling from coming off the supply package when the filling rod is on its return stroke.

The knife for cutting the filling thread, as well as the device for gripping the filling thread to prevent entanglement of it by the filling rod on the latter's return stroke from the center of the shed, is operated by a cam motion through a series of lever arms and a tappet arrangement.

The travel of both filling rod and hook is governed by a cam motion, as is shown in Fig. 1. No picker stick or throwing mechanism is used. It is claimed that this eliminates the noise and vibration so familiar in present-day weave sheds. The shedding motion, take-up, warp let-off, etc., are accomplished in the same manner as on a regular shuttle loom.

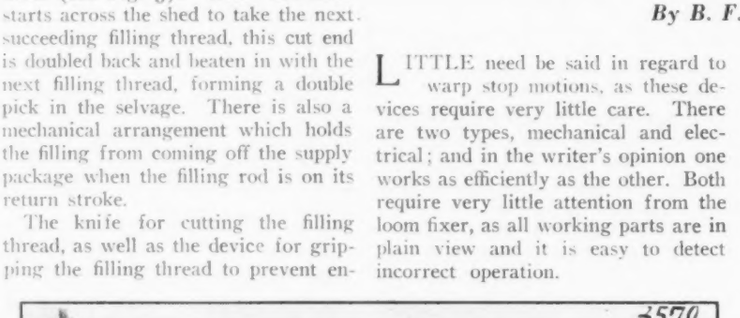


Fig. 1. Gabler Loom Where Picks Are Introduced Into Shed by Needle and Hook Device

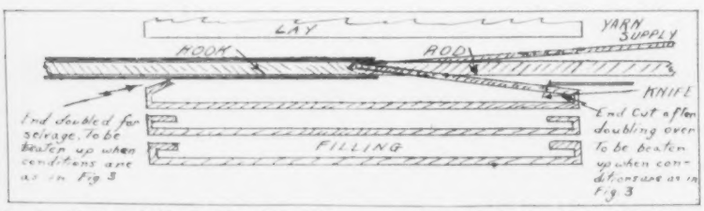

LAY
YARN SUPPLY
HOOK
ROD
KNIFE
End doubled for selvage, to be beaten up when conditions are as in Fig 3
End cut after doubling over to be beaten up when conditions are as in Fig 3
FILLING

Fig. 2. Rod and Hook Meeting at Center of Shed, Cutting Arrangement, and Doubled Position of Cut Ends Ready for Beating Up

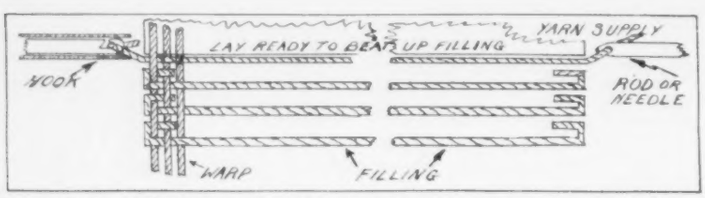


Fig. 3. Rod and Hook at Extreme Outside Ends of Their Travels, and Method of Selvage Formation from Cut Ends

Woolen and Worsted Loom Fixing

Adjustment of Knowles Filling Stop Motion*—Speeding Up Knock-Off—Effect of Friction in Shuttle

By B. F. Hayes

LITTLE need be said in regard to warp stop motions, as these devices require very little care. There are two types, mechanical and electrical; and in the writer's opinion one works as efficiently as the other. Both require very little attention from the loom fixer, as all working parts are in plain view and it is easy to detect incorrect operation.

This is not the case, however, with the filling stop motion. All we see of this device is the feeler wires coming up through the warp threads and dropping down on the filling. As we cannot watch the movements of the filling stop motion, it is very essential that we know the principle upon which it works. All manner of contrivances have been devised to help this stop motion do its work. In some instances, plates of angle iron are placed on the breast beam and passed between the feeler wires and the cloth to prevent the feeler wires coming up through the cloth. However, after many years of experience and study, it is the belief of the writer that the Knowles filling stop motion does not require any additional mechanism and that no part of it can be properly discarded. It can be adjusted to any grade of cloth and will work very nearly to 100% perfection if understood and the cloth being woven is familiar. For instance, suppose we are weaving plain or cotton weave—we cannot expect to get good results from the filling stop motion if we use the same adjustment that we make when weaving 4/1 or 2/1.

Principle Important

The fixer should understand thoroughly the principle of the filling stop motion; and, even if he never gets two warps of the same weave, he should be able to so adjust the motion that it will be suitable to the weave and the weight or size of the filling. Providing he can do this, he can so adjust the motion that it will not allow any broken picks to get by and will not stop the loom without reason.

Every time the filling breaks or runs out, no matter where the break or run-out occurs, we must prevent the feeler wires of the stop motion from making kinks by looping the filling in the center of the cloth or under the feeler wires. In order that the filling stop motion may be able to do its part, we must do our part. We cannot expect good results if the brush or packing in the shuttles is not uniform. Just as much tension must be given the filling on one shuttle as on another shuttle, and the packing or brush must be suited to the filling we are using. If the yarn is a 2-ply and strong, we may apply a large amount of friction; but, if it is single and tender, we cannot apply a brush. We must set our filling stop motion in accordance with the amount of brush it is possible to use in the shuttle.

Sometimes the slot in which the feeler wires drop is not deep enough, but it can very readily be cut out by means of a hammer and a 3/8 in. wood chisel.

The Knock-Off

On almost all Knowles looms, the filling stop motion knocks off the brake, and the brake rod, as it comes up, knocks off the shipper handle. We set the cam on the brake rod just as close to the shipper handle as possible without interfering with the starting of the loom, so as to knock the shipper handle more quickly. The writer finds, however, that it is much better to make use of "casting No. 9." This is a casting that was used before brakes were introduced in the loom. By means of No. 9 casting we can knock the shipper handle first.

We place No. 9 casting on the shipper handle shaft. There is one disadvantage in this practice in that we must either stop the motor that drives the loom or take off the loom driving belt while we are making the adjustment. After taking the belt off, we pull on the shipper handle, set No. 9 casting so that it will press against No. 8 casting, and force No. 8 to go as far as possible. We also set the casting on the brake-shaft against No. 8, but do not allow it to press No. 8 to its limit.

We thus have two fingers for No. 8 casting to knock off when the filling breaks or runs out. The one on the shipper handle shaft No. 9 comes up close to No. 8 and is knocked off first;

* Previous articles of this series, published March 6 and May 8, 1926, discussed adjustments of the friction drive, picking motion, and protecting motion.

but, before the protecting shield has had time to come up, No. 8 knocks off the brake. The knocking-off of the shipper handle before the brakes means that we do not have to apply as much energy to stop the loom. In this way, we cannot break as many brake castings and gears, and we shall not have to use as many new brake bands.

This No. 9 casting will not cost more than 50c, the fixer can place it on the loom in 30 min., and it will cut down running expenses of each loom not less than five dollars per year. By stopping the loom so much more quickly, it is a very great help to the weaver; and when once set it may not require to be reset again, although the writer makes it a point to examine it every time the warp runs out.

Textile Band Meeting Brings Together 450 Musicians

SPARTANBURG, S. C.—Eighteen bands with 450 or more musicians attended the Textile Band Association of South Carolina, which assembled in its fifth annual session at the Saxon Mills in this city.

John A. Law, president of the Saxon Mills, who is deeply interested in the Saxon band, which was host of the association, made the welcome address, with response by Dr. L. E. Bishop, president of the association. Prof. F. W. Wodell, teacher of voice at Converse College, and director of the Spartanburg Music festival, delivered an address on "Music."

As a grand finale was the concert by all 18 bands with the 450 musicians playing, directed by S. J. Bishop, director of the Saxon band, the honor coming to him as director of the host band.

Automatic Temperature Control

Important Installation on Scouring Bowls in Large New England Worsted Mill

By F. W. Sturtevant

IN one of the largest worsted mills in New England — a mill which handles wool from the grease to the finished piece — the importance of accuracy of control to the greatest possible degree is fully realized. Special effort is made, wherever feasible, to attain the closest proximity to perfection in regard to this factor which is present in every process incident to the production of high grade goods. Especially is this accuracy of control regarded as of prime importance in the first wet operation to which the wool fiber is subjected — the scouring. Here a deviation in temperature may be the cause of recurrent trouble in all of the subsequent treatments of the wool.

Scouring consists of partially removing from the wool the natural grease which is present on the fiber as well as the dirt and grit accumulated by this grease. The fact that a fabric made from grease wool could not be worn is not the only reason why the impurities must be removed before use can be made of the fiber. Subsequent operations, which straighten, parallel and twist together the fibers are all more efficiently done if the wool is scoured, and scoured properly.

Hand Operated Valves

Scouring consists of emulsifying the wool grease with a soap and rinsing this emulsion away with clean water. A solution of neutral soap is used. The temperature is very important in this process and generally is held at about 120 deg. F. It is attained by introducing live steam into the scouring bowl. Formerly, in the mill mentioned, this was done by opening a hand operated steam valve, with the risk of excessive temperatures which damage wool fibers.

Some little time ago, this mill secured regulators from four of the well known apparatus manufacturers for a try-out during a 30-day period. They then chose the one which seemed to be best suited for their particular conditions, and had 31 of these delivered and installed on scouring bowls. At the time the writer visited the mill, 24 of these bowls were in operation, while the other eight were being charged preparatory to operating.

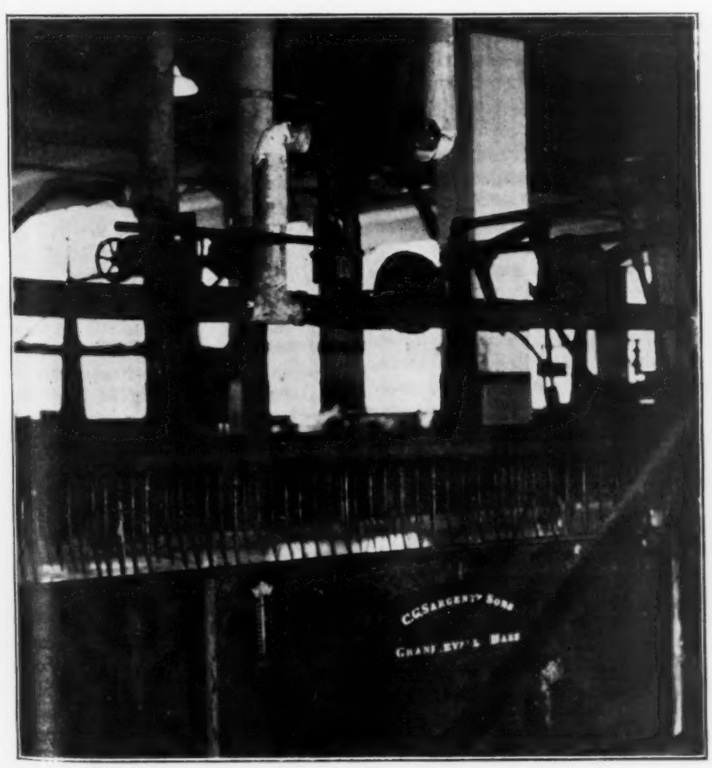
The regulators are of the self-contained type and have lever weight adjustment, allowing the temperature desired to be changed at will. The expansion tube or "bulb," which projects into the bowl containing the liquid to be controlled, contains a sensitive fluid, hermetically sealed, which generates a pressure due to the heat of the liquid in contact with it. This pressure is communicated through the flexible connecting tube to the bonnet of the valve. This bonnet is equipped with an all-metal bellows diaphragm, which responds to the pressure changes by closing or opening the valve so as to maintain the desired liquid temperature. The valve is of the double-seated balanced type. A thermometer is placed at the side of the bowl, in an easily readable position, so that the operative may keep a visible check on the efficiency of the regulator.

If the temperature is allowed to "run wild" in the scouring operation, the wool will be affected and may be harmed to such an extent that it will be entirely unfit for the use for which it was intended. Too hot soap, besides making the wool harsh and brittle and killing the luster, injures the microscopical scales so that the qualities of the yarn are affected and the dyeing will neither proceed correctly nor give perfectly satisfactory results.

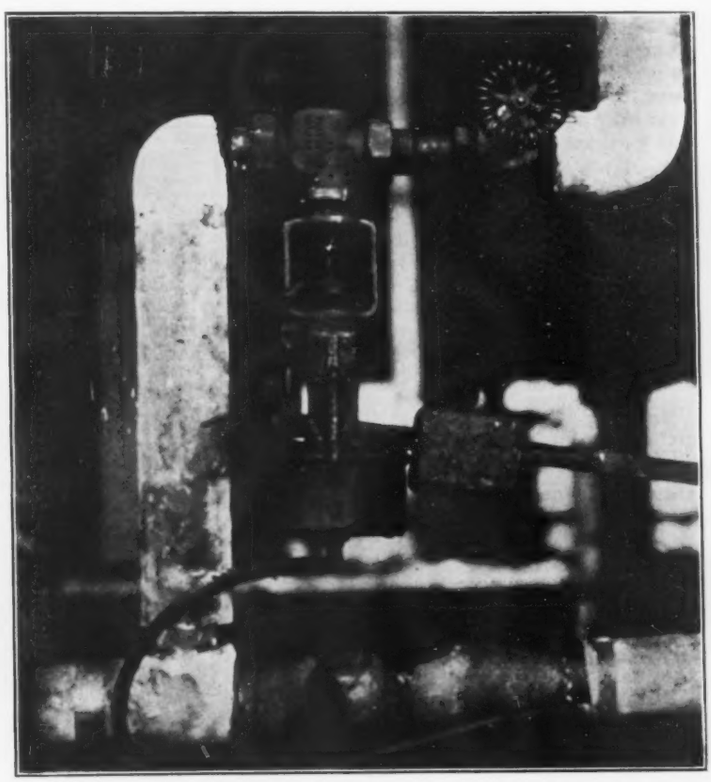
Any Temperature Maintained

When the valves were opened and closed by hand the human element, which is, at its best, far from being exact and efficient, was a necessary accompaniment and hence fluctuations in temperatures were kept at a minimum only by the watchfulness and integrity of the scouring bowl operator. Now this same operator is enabled to maintain whatever temperature the superintendent deems best by simply sliding the counterweight in one direction or the other on the lever arm.

Besides the better condition of the wool and the increased ease of control, the steam valve regulator has effected a material saving in steam consumption. Less steam is required because less is wasted in overheating and in reheating the water to the desired minimum temperature after it has fallen below this point, due to carelessness of the operator or some unforeseen condition.



Regulator Installed on Wool Scouring Bowl



Close-Up View of Regulator Installed on Scouring Bowl

Smith Rug Auction Is Well Supported

Large Offering Is Broadly Distributed to Retailers and Jobbers

At mid-week the Alexander Smith & Sons Carpet Co's. auction which started on Friday Oct. 1 and was scheduled to close on Saturday, Oct. 9, was still going strong. Excellent support on the part of small retailers, who thronged the salesroom, is facilitating what appears to be a record disposal of rugs and carpetings, both in number of units and total valuation. On Tuesday alone the sales totaled just past the $1,000,000 mark. On that day 17,840 bales were moved. The sale to Wednesday had covered over 74,000 bales, reaching a grand total of $4,383,500.

Not only was retail support good, but the bigger buyers showed no hesitation in picking up five and ten bale lots at the least concession from the figure at which the single bale lots were picked out by the smaller operators. Several of the big jobbers acquired large quantities during the course of the sale. Among the more prominent operators were noted Marshall Field & Co., Renard Linoleum & Rug Co., Empire Carpet Co., Sears Roebuck & Co., Carson Pirie Scott Co., Peck & Hills, J. J. Haines, Siegel May Stern & Co., Alms & Doepke.

Edward A. Haggenmuller, sales manager, announced at the start that the Smith price list for spring would be issued after the auction and that prices on that list would be guaranteed to March 31, 1927.

The inclusion of new patterns in the Smith auction has had a stimulating influence. Axminsters were strong in the sale, a trend aided by the advances named in such goods in the outside market. Velvets attracted many buyers and the support given these lines at the sale was interpreted as a good test of the market.

Typical sizes and qualities taken from the results of the daily sessions in the auction room are given below. Wilmerding Morris & Mitchell were the auctioneers and the sale was held in the New York office of the Smith Company.

OCTOBER 1 SESSION

		High	Low
12/4	Carlton Axminster	$30 50	$25 25
11/4	Carlton Axminster	22 75	21 25
10/4	Carlton Axminster	18 00	16 75
8/4	Carlton Axminster	14 50	14 00
12/4	Palisade Vel. Fr'd	22 75	21 25
11/4	Palisade Vel. Fr'd	18 75	17 75
8/4	Palisade Vel. Fr'd	11 75	11 00
12/4	Ardsley Axminster	22 50	21 50
10/4	Ardsley Axminster	14 75	13 50
6/4	Ardsley Axminster	6 75	6 25

OCTOBER 2 SESSION

		High	Low
12/4	Katonah Velvet	$15 00	$14 25
10/4	Katonah Velvet	10 50	9 75
12/4	Manor Tapestry	14 50	14 00
10/4	Manor Tapestry	9 75	8 75
12/4	Yonkers Axminster	33 50	32 00
10/4	Yonkers Axminster	22 00	20 75
6/4	Yonkers Axminster	9 50	9 00
12/4	Potomac Axminster	33 50	30 75
10/4	Potomac Axminster	22 25	20 50
8/4	Potomac Axminster	18 50	16 75
12/4	Colonial Velvet Fgd	27 75	22 50
10/4	Colonial Velvet Fgd	17 75	16 00
6/4	Colonial Velvet Fgd	8 25	7 50

OCTOBER 4 SESSION

		High	Low
12/4	Hudson Tapestry	$12 25	$11 75
10/4	Hudson Tapestry	7 75	6 50
12/4	Carlton Axminster	26 75	25 75
11/4	Carlton Axminster	23 25	21 50
10/4	Carlton Axminster	18 00	17 25
8/4	Carlton Axminster	14 50	13 75
12/4	Mead'br'k Worst. Fgd	44 50	41 25
10/4	Mead'br'k Worst. Fgd	28 00	24 75
6/4	Mead'br'k Worst. Fgd	12 25	11 50
12/4	Ardsley Axminster	22 50	21 90
10/4	Ardsley Axminster	15 50	13 25
8/4	Ardsley Axminster	12 50	11 25

OCTOBER 5 SESSION

The price ranges at Tuesday's sales, as announced by the Smith Company, are:

Grade—	High	Low
Riverside Velvet	1 20	1 10
Mottled Palisade Velvet	1 27½	1 25
Mottled Velvet	1 52½	1 47½
Mottled Premier Velvet	1 80	1 70
Mottled Wilton Velvet	1 85	1 80
12/4 Palisade Velvet Fgd	22 00	21 25
11/4 Palisade Velvet Fgd	19 75	18 50
8/4 Palisade Velvet Fgd	12 00	11 15
12/4 Katonah Velvet	16 00	15 10
10/4 Katonah Velvet	10 50	9 50
8/4 Katonah Velvet	9 00	8 50
12/4 Yonkers Axminster	34 25	32 50
10/4 Yonkers Axminster	22 25	20 75
6/4 Yonkers Axminster	9 25	8 50

OCTOBER 6 SESSION

		High	Low
12-4	Potomac Axminster	$34.50	$32.75
10-4	Potomac Axminster	22.75	21.50
8-4	Potomac Axminster	18.50	16.25
12-4	Manor Tapestry	14.50	14.00
10-4	Manor Tapestry	9.50	8.75
12-4	Colonial Velvet Fgd	27.75	25.75
10-4	Colonial Velvet Fgd	17.75	15.50
6-4	Colonial Velvet Fgd	8.00	7.50
12-4	Hudson Tapestry	12.50	12.15
10-4	Hudson Tapestry	7.50	6.50
Riverdale Velvet		1.32½	1.17½
Mottled Palisade Velvet		1.35	.....
Mottled Velvet		1.52½	1.50
Mottled Premier Velvet		1.62½	.....
12-4	Ardsley Axminster	22.75	22.10
10-4	Ardsley Axminster	14.75	13.75
6-4	Ardsley Axminster	7.00	6.50

Interesting N. A. C. M. Program

Style Show, Open Forum and Banquet Insure Unusually Important Convention for Cotton Manufacturers

THE convention of the National Association of Cotton Manufacturers to be held next Wednesday and Thursday, Oct. 13 and 14, at the Copley Plaza Hotel, Boston, will present an unusually interesting and varied program, with a style show, open forum and banquet as its outstanding features. In addition the organization and objectives of The Cotton-Textile Institute will be explained, and the style show will be linked up with a discussion of style creation and application at the Wednesday afternoon session and with merchandising at the Thursday afternoon session.

Wednesday Afternoon Session

The first formal session of the convention will be opened at 2:30 o'clock Wednesday afternoon, and, following the usual business session at which reports of secretary, treasurer and committees will be presented, President William B. MacColl will read his address and this will be followed by a session devoted to "Style Creation and Application," presided over by John A. Sweetser. Among the speakers will be Miss Ellen K. Doughty of the Butterick Publications; H. N. Doughty, assistant treasurer Ipswich Mills; Miss Margaret Case of *Vogue* and Mary Brooks Picken of the *Pictorial Review*. Lady guests and buyers for Boston department stores and jobbing houses are invited to attend this session.

The Style Show

The style show will be staged during the dinner-dance which opens at 7 o'clock Wednesday evening. The style show is being managed by Chester I. Campbell, secretary-treasurer of the Textile Exhibitors' Association, is under the direction of Madame Jeffries and the costumes to be exhibited are the product of association mills. Professional models will be employed to exhibit the costumes and these will be shown during the progress of the dinner; a number of prizes will be awarded and among the judges are Lew Hahn, secretary of the National Retail Dry Goods Association, and Mrs. W. J. Ovitte of *Women's Wear*. Several vaudeville acts will be staged during the evening and the dinner and style show will be followed by dancing.

Thursday Morning Session

Russell H. Leonard, treasurer of Pepperell Mfg. Co. and Ipswich Mills will act as chairman of the session to be convened at 10 o'clock Thursday morning, and leading members of the committee having charge of the organization of The Cotton-Textile Institute will report on the results of their work to date and the organization and objectives of the institute. Among those expected to speak are Robert Amory, Henry F. Lippitt and Stuart W. Cramer. There will be an opportunity for discussion and questioning which will be followed by a motion picture in three reels showing cotton growing in Egypt.

Thursday Afternoon Session

The Thursday afternoon session will convene at 2:30 o'clock with Henry C. Everett, Jr., as chairman. Following reports of resolutions committee, medal committee, nomination committee, and election of officers there will be an open forum on merchandising, long draft spinning, rayon and other synthetic fibers. The discussion of merchandising will be opened by Melvin T. Copeland of the Harvard University School of Business Administration and he will be followed by Kenneth Moller of the Hunter Mfg. & Commission Co. and several other speakers. Among those who are expected to speak on long draft spinning are Frank B. Ricketson, assistant treasurer of the Quinebeaug Co., Providence, R. I.; Henry A. Newton, superintendent Cocheco Dept., Pacific Mills, Dover, N. H., and J. Foster Smith, agent of the Naumkeag Steam Cotton Co., Salem, Mass. Among the speakers who will lead the rayon discussion are Charles S. Fowler, president of the Westerly (R. I.) Textile Co.; A. S. Ripper of the du Pont Co.; C. C. Bassett, Jr., of the Viscose Co.; and William B. Widden of the Celanese Co.

Association Banquet

The convention will close with the association banquet which will be convened in the grand ball-room of the Copley Plaza Hotel at 7 o'clock Thursday evening. President William B. MacColl will preside and among the speakers will be James R. MacColl, father of President William B., and a former president of the association; Franklin W. Hobbs, treasurer of the Arlington Mills, and a former president of the association; and Edwin Farnham Greene, treasurer of Pacific Mills, and a former president of the association. If United States Senator William M. Butler should happen to attend the banquet as usual it is quite certain that he will be called upon for a few remarks. At this writing final acceptance of the principal speaker of the evening had not been received, but it may be stated that he is a man of national prominence and that his subject will be found of unusual interest.

Convention Committees

The various committees having charge of arrangements for the convention are as follows:

Program Committee—H. L. Bailey, chairman; C. E. Bailey, E. N. Hood, E. H. McKitterick, N. M. Mitchell, H. G. Nichols, S. B. Paine, A. W. Reynolds, F. B. Ricketson, Aldrich Taylor.

Style Show Committee—John S. Lawrence, chairman; Irving Brown, Miss Margaret Crane, H. N. Doughty, Miss Marjory Holligan, W. B. MacColl, W. S. Pepperell, A. W. Reynolds.

Nominating Committee—C. F. Broughton, chairman; N. F. Ayer, Amory Coolidge.

Resolutions Committee—John Skinner, chairman; G. Bion Allen, Albion C. Cook.

Medal Committee—W. S. Pepperell, chairman; B. H. Borden, F. A. Flather, H. P. Kendall, R. H. Leonard.

Axminsters Rise at Start

Spring Opening Finds Wiltons and Velvets Unchanged in Price

The spring, 1927, season in rugs and carpetings opened this week with offerings from many prominent producers. In general axminsters have been advanced 4 to 8% from the fall basis, tapestries have been advanced about the same amount, wiltons and velvets are unchanged, except for one line of wiltons which was reduced slightly and some velvets which were advanced.

The season is opened with enthusiasm. The Smith auction sale has moved a record volume of rugs but distributors seem able to absorb these and more. Stocks generally outside of firsthands were light. A strong situation in carpet wools has driven mills to obtain higher figures.

A brief summary of a few of the openings follows:

W. & J. Sloane, selling agents for the Mohawk and Masland Mills, issued a list effective only to Jan. 1, deliveries after that date being ac-

(*Continued on page* 167)

American Assn. of Woolen and Worsted Mfrs. Annual on Dec. 1

The annual meeting and banquet of the American Association of Woolen and Worsted Manufacturers will be held at the Waldorf-Astoria, New York on Wednesday, Dec. 1, 1926.

Details of the program will be available later.

Silk Industry for Georgia

Large Plant to be Constructed at Elberton by Susquehanna Silk

Clement S. Ucker, Director of the Seaboard Air Line Railway Development Department, has just announced that a large silk weaving mill will be built at Elberton, Ga. This development has been reported in these columns. This enterprise is financed by the Susquehanna Silk Mills and allied interests of New York and Pennsylvania. Contract for the erection of the mill was let this week to the A. K. Adams Construction Company of Atlanta, and calls for its completion in 70 days. The main factory building of the first unit will be 70 x 370 feet, two stories high, and will employ 200 persons to begin with. Contract for the construction of the mill village houses has been let to the Fisk-Carter Construction Co. of Greenville, S. C., and calls for completion in 90 days. Robert & Co. of Atlanta, architects and engineers, have charge of the construction. This constitutes an entirely new industry for Georgia and for the South, as it is the first enterprise of its kind to come South.

Details surrounding the negotiations leading up to the final decision to locate the mill at Elberton have been held in the utmost secrecy. For some time past the Seaboard's Industrial Department has been negotiating with the Susquehanna Silk Mills relative to a southern location, and in July Warren T. White, Acting General Industrial Agent, accompanied officials of the Susquehanna Silk Mills on a tour through Georgia and South Carolina with the subsequent result that Elberton was decided upon. The Elberton Chamber of Commerce donated a 35-acre plant site, and agreed to construct side track to the mill. As a further inducement the new industry has been exempted from city and county taxes for a period of five years.

The Susquehanna Silk Mills have a dozen large mills at various points in Pennsylvania and Ohio. The Elberton mill is being incorporated under the Georgia laws as Seaboard Silk Mills, this name having been decided upon out of recognition of the services of the Seaboard's Industrial Department in promoting this enterprise. It is freely predicted that this operation will be greatly expanded in the near future and that this development foreshadows great activity in an industry new to this State.

It is announced that ground for the mill at Elberton was broken last Thursday and that construction is proceeding rapidly.

Appointed Agent for Two Hosiery Mills

Cannon Mills, Inc., New York, have been appointed selling agents for Renfro Hosiery Mills Co., Mount Airy, N. C., and Chatham Knitting Mills Co., Durham, N. C.

Secretary Named for Institute

George A. Sloan, of Copper and Brass Research Association, Appointed

THE appointment of George A. Sloan, of Nashville, Tenn., as secretary of The Cotton-Textile Institute, to assume duties Nov. 1, marks another important step in the development of that new organization.

Mr. Sloan's background is a particularly active and varied one. His most recent connection has been as secretary of the Copper and Brass Research Association, an office which he assumed shortly after the formation of the association by leading copper mining companies and fabricators of brass and bronze who were seeking to stimulate the knowledge and uses of copper and its alloys in the United States. The effectiveness of this cooperative work is shown by the fact that shipments of copper this year exceed 1,750,000,000 lbs. as compared with less than 1,000,000 lbs. in 1921.

The newly appointed secretary of the Institute is a graduate of Vanderbilt University, Nashville, Tenn., and had experience in the financial and sales end of a large department store from the time of his graduation in 1915 until America's entrance into the World War. His father, Paul Loe Sloan, is president of the Cain Sloan Co., one of the largest mercantile establishments in the South.

In the spring of 1917 Mr. Sloan was commissioned a first lieutenant of infantry and went overseas shortly thereafter in the Second Division. Soon after his return to America he was advanced to the rank of captain and later was commissioned a major of infantry in the Officers Reserve Corps.

He left the army in the fall of 1919 to become assistant to the chairman of the American Red Cross. Subsequently he was acting director of foreign operations for that organization, having charge of activities in Europe and the Far East. He was later assistant to John Barton Payne, present head of the Red Cross.

A lawyer by profession, Mr. Sloan is a member of the Bar of Tennessee. He is also a member of the Council of Foreign Relations, New York; Academy of Political Science, New York; the British Institute of Metals, and the Lawyers' Club of New York.

His previous experience gives him a thorough knowledge of group industrial effort on which to build his efforts in connection with The Cotton-Textile Institute. He will proceed with the organization work of that body, pending the election of a president.

ELECTED SECRETARY OF INSTITUTE

George A. Sloan

Announcement has been made that George A. Sloan, of Nashville, Tenn., has been elected secretary of the newly-formed Cotton-Textile Institute, to take office Nov. 1. Mr. Sloan is widely known throughout the country and in official Washington. He has been secretary of the Copper and Brass Research Association for the last four years, and during that period the volume of business in that industry has practically been doubled.

Institute Program to be Continuous

A CONTINUOUS study of the nature and trend of the economic forces which affect the success and prosperity of the cotton manufacturing industry is the keynote of the program for The Cotton-Textile Institute which was adopted by the executive committee of that organization in New York Monday.

"The first task of the Institute is to furnish the mills with a comprehensive view of all the factors affecting the industry," declared the committee in announcing the program which it is to submit to the Institute's first annual meeting, Oct. 20.

Conditions in many foreign countries, as well as those in this country will be studied as the committee believes that the prosperity of the American cotton manufacturing industry is affected by them to a large extent. "Facts regarding our industry can be given their proper setting only by studying foreign and domestic markets and foreign conditions," said members of the executive board.

"The Institute," they continued, "will analyze existing data bearing on its problems and provide for the assembling of significant facts not yet compiled. It will segregate the data that is useful from that which is worthless. It will carry its analyses as far as may be necessary to enable an intelligent interpretation of the data for the guidance of cotton manufacturers.

"In making its analysis of the market conditions and production the Institute must distinguish between general or long-time trends and temporary conditions. The Institute will have a two-fold task, therefore, in carrying on these continuous studies of market and production statistics. One task is to determine the general trend of the market for the various products and to detect changes in that trend. The other task is to detect and point out the changes that are of only temporary significance. In both instances, however, the Institute should undertake to ascertain the causes for the changes in trend or in temporary conditions. The study of trends in the industry will give the manufacturers a perspective. The continuous analyses of current conditions will keep the manufacturers properly informed on current happenings."

To Work in Groups

The Institute proposes to bring its members together in such groups as have similar problems to solve; to assist these groups in the solution of these problems, the committee declared in its statement issued following the meeting. "This will necessarily lead to the continuous study of the nature and trend of the economic forces which affect the success and prosperity of the cotton manufacturing industry," the statement continues.

"The object of such a study should be to enable the Institute to bring home to cotton textile manufacturers a clear and quick understanding of these economic facts. The Institute will make a study of the market, general trend of sales in both domestic and foreign markets. This will be made according to uses and products in the various countries.

"Temporary fluctuations of sales will be made in domestic and foreign countries. In the United States it will be made with regard to mills, converters, cutters, other manufacturers, wholesalers and retailers. Price trends will be studied by prod-

ucts in both domestic and foreign markets. The causes for changes in trends and for temporary fluctuations will be sought. Conditions in industries using products will be investigated and a study will also be made into the buying habits of distributors and of consumers.

"Studies will also be made of the purchasing power in domestic and foreign markets, style influences and special factors. Marketing methods will be studied with regard to domestic sales to converters, to cutters, other manufacturers, wholesalers and to retailers."

Advertising and the relations of manufacturers with distributors are also on the program of things to be studied by the Institute. New potential markets both domestic and foreign and the methods of development are listed in another section of the program.

A study of production factors affecting the market will include investigation of the general trend of production in American mills by products and in foreign mills by countries and by products. A study of temporary fluctuations in production will be made in American and foreign mills.

Further studies on the program are: inquiries into stocks of goods in the hands of mills and distributors, including converters, cutters, wholesalers, retailers; a study of costs both by groups of mills and by cost accounting methods; a study of credit, including that which is granted by banks, that granted by selling agents and that extended by machinery manufacturers.

The final section of the program provides for studies into production statistics, movement statistics, stocks statistics, price statistics, consumption statistics, the significance of future market to manufacturers, the problem of securing improvement in quality, the problem of securing improvement in methods of baling, packing and sampling and the simplification of lines.

Cotton Goods Sales Exceed Output

SALES of standard cotton textiles for the quarter ended Sept. 30 exceeded production by 38% according to data just compiled by the Association of Cotton Textile Merchants of New York. Total production for the three months' period between July 1 and Sept. 30 was 612,712,000 yds. compared with aggregate sales of 848,642,000 yds. These figures, which represent approximately 80% of all standard cotton cloths manufactured in the United States included all yardage reports made to the association.

Stocks on hand have been declining steadily under a persistent buying demand. Stocks decreased from 305,425,000 yds. on July 1 to 224,305,000 yds. on Sept. 30 or 26¼%. Compared with Sept. 15, when stocks aggregated 234,810,000 yds., stocks decreased in the two weeks ending Sept. 30 by 10,502,000 yds or 4.4%.

Unfilled orders on Sept. 30 totalled 338,650,000 yds. compared with a total of 187,837,000 yds. on July 1, an increase of 150,813,000 yds. of 80%.

The figures which are reported to the association by its members cover more than 200 standard cotton cloths but do not include fancy or special cotton cloths which are individual in design and cannot be grouped in statistical summaries.

Because of the large volume of cotton textiles which are moving steadily into consumption the average price of cotton textiles has not followed the price of raw cotton on its downward trend.

Is Over-Production of Silks Likely?

Manufacturers Speeding Up Schedules and Brimful of Confidence—Good Business Has Cleared Out Stocks

THE situation in the silk trade at the present time shows a vast improvement over three or even two months ago. A very large summer business has been followed by a fall season that has come up to expectations in every particular. This fall season moreover bids fair to continue well into October which would leave the manufacturers in a very satisfactory position indeed.

It is the very strength of the present situation and the confidence that it engenders that is causing certain farsighted observers to voice their fears as to the possibility of another overproduction of silks for the coming spring.

For once at least the raw silk market proved a good barometer of business. The advance that got under way in June forecast the improvement that was to follow in very accurate fashion. When the market was recovering at this time it is safe to say that four out of five in the trade looked for a further drop that would carry prices below the low level of $5.50. The rally was considered temporary and even the importers themselves advised their customers to take it easy as far as contracting for any large quantities of raw silk was concerned.

Regarding this openly expressed bearishness on the part of the raw silk houses, it can be said that there was no attempt to mislead in their statements. They really looked for further weakness and the best proof of this fact is that many of them stuck to their guns during July and in some cases well into August. Much of the cheap silk that was available during these two months was offered in the expectation of covering at still lower levels when the Yokohama market felt the full weight of the heavy arrivals of new season silk. An utter lack of confidence in existing levels of prices can be readily seen in the disinclination to build up any supplies of raw silk in New York.

Calculations Upset

Two very important developments appear to have upset the careful calculations of the majority. First and foremost has been the ability of the fabric markets to absorb the huge surplus of spring goods that threatened for a time to topple the entire price structure into the depths. While a considerable proportion of the surplus of printed goods was marketed at panic prices during June and early July, it is nevertheless a fact that the absorptive power of the market was much greater than was generally accredited to it.

Another important factor in the recovery in the price of raw silk has been the strong recovery in the exchange rate of the Yen. Just now it is very close to the gold parity which by the way is the announced destination. Early in the year the rate was as low as 42.00 whereas today it stands at 49.00. This refers of course to the three months' sight rate. When prices were at their low point it ranged around 45.00 to 46.00. This factor alone would account for a difference in New York prices of between 50c to $1.00 a lb. Naturally the Yokohama market has had to adjust itself also to the advancing Yen exchange. At the same time there would exist in the Japan market certain minimum levels of resistance irrespective of any question of exchange.

Improved Fall Business

Fall business has improved steadily through July and August. In the first named month fall silk and the plain staple crepes had to compete with the bargain offerings available in printed goods. This was distinctly a factor at the time, for a store, for instance, that could buy printed silks at $1.25 and even in some cases below $1.00 a yard would certainly concentrate on the bargains and pass up the regular goods which would cost $1.50 to $1.75 a yard.

One or two of the very large houses are understood to have retired the surplus of prints to be held for a more opportune market. These, however, are merely the exception that go to prove the rule. The vast majority had neither the financial resources nor the inclination to hold on to their surplus. During August the market received with enthusiasm the weighted satins and Cantons.

With the worst so palpably behind it is not strange that silk manufacturers are again viewing the future through rose-tinted spectacles. That elusive thing confidence is again in the air. The extent of the improvement in recent months is clearly seen in the consumption figures of the Silk Association of America for the month of August. These show that there were delivered to mills 45,000 bales of silk during the month in question. The greatest amount in the history of the trade is only 1,000 bales or so higher. What proportion the hosiery trade is taking of this total is open to question but an interesting bit of information came out only recently that one of the large chain store organizations had placed the largest order for full fashioned hosiery amounting to over 350,000 dozen.

Will Mills Overproduce?

What will follow the fall season is just now engaging the attention of many. Going out of the fall season with stocks down to nominal proportions, will the entire trade go ahead full tilt and overproduce for the coming spring season? If they do, or if there are any signs of such a development, there are the canny buyers of finished silks to be reckoned with. These will unquestionably hold back until the last possible moment and wait for the bargains to drop into their eager hands. There appears to be no middle course under present day conditions.. Either the buyer finds it necessary to climb for the merchandise which means good prices, or else the manufacturers overproduce to such an extent that they have to go out and sandbag their customers with impossibly low quotations. For the spring of 1927 the silk manufacturers can pick their own method of procedure.

Census Shows Growth of Wool Fiber Recovery

WASHINGTON, D. C.—The Department of Commerce announces that, according to data collected at the biennial census of manufactures, 1925, the establishments engaged primarily in the production of wool shoddy (recovered wool fiber) reported 67,543,476 lbs. of product valued at $19,056,866, together with other products to the value of $1,956,042, making a total of $21,012,908. This total represents an increase of 25.8% as compared with $16,697,515 in 1923, and 208.9% as compared with $6,803,118 in 1921.

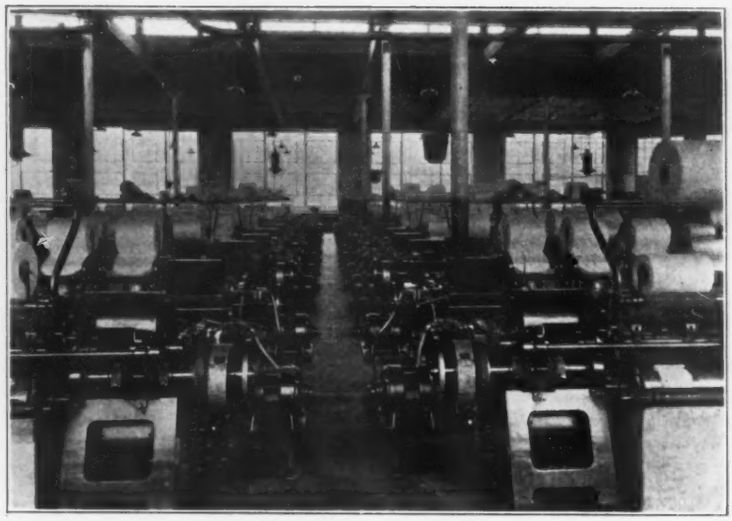
Of the 67 establishments reporting for 1925, 26 were located in Massachusetts, 9 in New York, 9 in Pennsylvania, 6 in Rhode Island, 4 in Connecticut, 3 in New Jersey, 3 in Ohio, and the remaining 7 in five other States.

The statistics for 1925, 1923, and 1921 are summarized in the following statement. The figures for 1925 are preliminary and subject to such correction as may be found necessary upon further examination of the returns.

	1925	1923
Number of establishments	67	59
Wage earners (av. number)*	2,216	2,128
Maximum month	Jan. 2,577	Dec. 2,272
Minimum month	Nov. 1,973	Aug.† 1,972
Per cent of maximum	76.6	86.8
Wages	$2,606,821	$2,442,522
Materials (including fuel, electric power, and mill supplies)	$14,961,556	$10,627,386
Products, total value	$21,012,908	$16,697,515
Recovered wool fiber:		
Pounds	67,543,476	55,050,968
Value	$19,056,866	$13,678,894
All other products, value	$1,956,042	$3,018,621
Value added by manufacture‡	$6,051,352	$6,070,129
Horsepower	13,597	12,496

* Not including salaried employes.
† Same number reported for September.
‡ Value of products less cost of materials.

Airplane View of Spinning Plant and Village of Dixie Mercerizing Co.



Combing Room in Spinning Plant of Dixie Mercerizing Co.

New School at Ware Shoals Dedicated

Over a thousand people attended the exercises on Sept. 30, incident to the dedication of the $150,000 school building at Ware Shoals, S. C., the town owned by the Ware Shoals Mfg. Co. The guests included Fairfax Harrison, president of the Southern Railway; F. Barron Grier, president of the Charleston & Western Carolina Railway; Gov. Thomas G. McLeod of South Carolina, and J. H. Hope, State Superintendent of Education of South Carolina. Benj. D. Riegel of New York City, president and treasurer of Ware Shoals Mfg. Co., presided over the exercises.

In his speech, Mr. Grier pointed out the fact that when Mr. Riegel took charge of Ware Shoals a few years ago the town consisted of a few scattered tenement houses, and the cotton mill was then four unfinished brick walls. Ware Shoals is now a complete town with varied industries.

DixieSpinningEquipmentEnlarged

Spindleage Increased to 23,000, While Mercerizing Plant Has 235,000 Lb. Weekly Capacity

By Fred C. Schneider, Jr.

CHATTANOOGA, TENN.

THE latest addition to the Dixie Mercerizing Co.'s spinning plant has been completed and is now in full operation. This addition brings the number of spindles in the plant up to 23,000 and gives it a capacity of 60,000 lbs. of yarn a week. The mercerizing plant now has a capacity of 235,000 lbs. of yarn every six days. Both plants are operating at their full capacity.

With the completion of the spinning mill addition and the erection of another group of houses in the mill village, the investment of the company has been brought up to a total of approximately $3,000,000. An average of 750 people find steady employment in the Dixie plants and receive about half a million dollars a year for their work.

And yet this industry as it stands today is only the beginning. A spinning plant with sufficient capacity to enable the mercerizing plant to operate entirely upon Dixie made yarns is the ideal of the management. To accomplish this, 75,000 spindles will be needed, a plant three times as large as the present spinning mill. Such a plant will represent an investment of approximately $6,000,000.

The next enlargement to be made by the company will be in the form of an addition to the spinning plant. Just when this will be and details as to size, the officials have not yet decided but a clear cut policy has been defined. The plan of expanding step by step has been adopted and, barring some unforseen situation, will continue to be carried out in the future.

Both mercerizing and spinning plants are new, the former having gone into operation in 1920 and the latter in 1923. The Dixie industries have gone through a period of exceptionally rapid growth and development. The history of the company in itself is a page from the book of southern textile advancement. The company today has a total investment in real estate, buildings, mill village and machinery of $3,000,000 and the industry is but a few years old. There has hardly been a time since the company was founded that there has not been an expansion program underway. One addition is barely completed and in operation before another is put underway.

Started to Mercerize Only

The company was first organized to

Quilling Room in Dixie Mercerizing Co. Plant

Winding Room in Dixie Mercerizing Co. Plant

erect and operate a mercerizing plant only. The spinning mill is an outgrowth of this business. The Dixie Mercerizing Co. was organized by a group of Chattanooga textile men. The original plant was designed by Lockwood, Greene & Co. and was erected by John Parks, general contractor of this city.

Before the mercerizing plant was completed J. T. Lupton, a well-known capitalist of Chattanooga, and his son, Cartter Lupton, purchased a controlling interest.

It was the first entrance of the Luptons in the textile industry. From the very start, however, the venture proved highly successful and profitable. The owners soon realized that it would be necessary to manufacture the yarns they were to mercerize if the product was to be of absolutely uniform high quality. This was the main reason, according to W. A. Smith, secretary-treasurer, that a group of the mercerizing company stockholders decided to organize the Dixie Spinning Mills.

The mercerizing plant had been completed and placed in operation in 1920 while the spinning company was organized and construction started in 1922. The first unit of the plant was placed in operation the following year, 1923.

To provide ample room for expansion into the mammoth industry the owners had planned, it was decided to select a site a short distance from the city. What was known as the Caldwell farm, a tract of about 850 acres, was purchased. This huge tract is served by the C. N. O. T. P. division of the Southern Railway system. It is on a hard surface highway and also has considerable frontage on the Tennessee river, making three types of transportation possible. The tract is about six miles from the city.

A mill site half a mile or more from the main highway was selected. On a beautifully shaded hill, a stone's throw from the plant, a model mill village was established. The village has been named Lupton City and now boasts 150 homes.

Lupton City forms a pleasing comparison to the average stereotyped cotton mill village. The tract was laid out by a nationally recognized planner and the houses are of varying style architecture. All conveniences are offered, including motor bus service to the city.

The original spinning mill and subsequent additions were designed by Robert & Co. of Atlanta, Ga. The last addition was erected by T. C. Thompson Co., Charlotte contracting company.

The original plant had 12,000 spindles. The first addition increased the equipment by 3,000 spindles, while the latest expansion added 8,000, making the present equipment 23,000 spindles. The spindles are operated day and night, which gives a production equal to 46,000 spindles.

The plant is entirely electrically operated, the machines being of the individual motor type. Power is supplied by the Tennessee Electric Power Co.

Mercerizing Plant Enlargements

The mercerizing plant has been enlarged twice, once through the addition of more building space and machinery and again through the addition of machinery alone. The building operation was engineered by Pringle & Smith of Atlanta and was erected by Mark K. Wilson, Chattanooga contractor.

In the location of the mercerizing plant the usual line of thought was not carried out. The wisdom of this change from the usual has been amply vindicated by the results. The mercerizing plant was located in the heart of one of Chattanooga's largest residential sections, Highland Park. This made a mill village unnecessary and has solved the labor problem so far as the plant is concerned.

The Dixie Mercerizing Co. is now spinning two-ply combed peeler from 20s to 60s. It is selling from 20s to 120s in mercerized two ply yarn. Only mercerized yarn is sold, the entire product of the spinning mill being put through the mercerizing plant.

In 1925 it was decided that it would be advantageous for the two separately operated industries to be under one corporation. Accordingly the mercerizing company acquired the spinning company through purchase of the stock of the latter. This was effected by an exchange of stock after capital of the mercerizing company had been increased, the spinning mill owners receiving mercerizing stock. The ownership had been practically the same previously. The business now operates under the name Dixie Mercerizing Co.

Officials are J. T. Lupton, president; Cartter Lupton, vice-president; W. A. Smith, secretary-treasurer; G. H. Ellis, general manager; W. N. Thomas, assistant general manager; George R. West, Jr., superintendent, and T. B. Moore, superintendent of spinning.

IT CAN'T TALK BACK

One of the Textile Features of the Recent Leipzig (Germany) Fair Was this Huge Parrot Made Entirely of Skeins of Wool Yarn in Correct Colors

Need for Statistics

Wool Manufacturers Advocate Collection of Data

At a meeting of key men selected from various geographical groups of the American Association of Woolen and Worsted Manufacturers' membership held in New York on Thursday, Sept. 29, the subject of collecting and disseminating vital statistics of the wool manufacturing industry was seriously considered.

A. D. Whiteside, president of the National Credit office, submitted a paper on the subject, supplementing one read before a recent group meeting and published in these columns. It was Mr. Whiteside's recommendation that an attempt should be made to gather three simple groups of statistics as a starting point, preliminary to the collecting of more extensive data later. These groups, according to Mr. Whiteside, should consist of semi-annual statistics as to stocks and monthly reports on production and sales.

After considerable serious discussion it was the unanimous sense of the meeting that there will be no serious difficulty in collecting the desired information when the reasons for it and the methods for gathering it and its issuance are made clear. There was a general expression as to the necessity for statistics and an equally general expression of willingness to supply them.

Arrangements are now under way for group meetings of manufacturers at which Mr. Whiteside will explain the details of the plan for gathering and publication of these statistics and the results likely to issue therefrom. The first of these meetings will be held this week in Pittsfield, Mass.

President Robert T. Francis of the American Association has recently appointed a committee of five whose duty it will be to draft a plan for bringing key men of the industry into closer contact with Association affairs and the general management of the Association. This committee has already met and it is expected the plan will be drafted and placed before the Executive Committee and Directors for ratification soon.

Eastern North Carolina Mill Men Meet

ROCKY MOUNT, N. C.—The Eastern North Carolina division of the Southern Textile Association, composed of approximately 65 cotton mills, met in this city for a one day's session on Saturday, Oct. 2. There was no formal program for discussion, the members bringing up any topic in which they were particularly interested.

Chairman C. L. Black, of Goldsboro, presided over the meeting, and N. B. Hill, of Kinston, was secretary. Representatives of several mill supply firms were present. At the noon recess a reception and a barbecue dinner was given to the visitors by the Rocky Mount Mills, Hyman L. Battle, president, at Shores Springs.

Annual Golf Game at Chattanooga

Textile Men Gather for Two Days at Country Club—Annual Banquet on Oct. 1

CHATTANOOGA, TENN.—The annual 36-hole golf tournament of the Chattanooga Textile Association was held at the Chattanooga Golf and Country club the afternoons of Sept. 30 and Oct. 1, being participated in by about 60 textile men and their friends, of which 25 were from out-of-town. A feature of the outing was the annual banquet held the night of Oct. 1 at the golf club.

T. H. McKinney presided at the banquet. He called upon several of those present for talks and entertainment numbers, which were greatly enjoyed. The main feature of the banquet was the presentation of prizes for the tournament.

Awards for the 36 holes were:

First prize, Silver cup presented by Scott & Williams Machine Co. of New York, won by John Lovell, local hotel man.

Runner up, Silver cup presented by Philadelphia Metal Drying Form Co., won by R. D. McDonald.

Prizes given for 18 holes played Sept. 30:

First prize, Silver cup presented by Mark K. Wilson, local contractor, won by Albert H. Thatcher, Chattanooga.

Second prize, Driver and brassie presented by Leon Ferenback Silk Co. of New York, won by Mark Wilson, Chattanooga.

Low net score foursome prize, Four golf clubs presented by J. L. Dabbs of E. I. DuPont de Nemours & Co., Charlotte, won by A. H. Thatcher, J. C. Kain, J. L. Dabbs and E. L. Cetwick of New York.

Prizes for 18 holes Oct. 1 match were:

First Prize, Silver cup presented by John Lovell of Hotel Patten, Chattanooga, won by Bob Smith of Philadelphia.

Runner up or second prize, Driver and brassie presented by Leon Ferenback Silk Co. of New York, won by Joseph Zens, Chattanooga.

Low net score foresome, Four golf clubs presented by Fred Scholler of Scholler Brothers, Philadelphia, won by R. C. Aycock, Joseph Zens, W. S. Caulson and W. H. Willard.

Bob Smith trophy, presented by Bob Smith of Philadelphia, won by John Lovell.

Runner up prize to trophy, A silver mounted cigarette case presented by Quaker City Chemical Co. of Philadelphia, won by T. H. McKinney.

Two silver cups offered as consolation by W. H. Willard of Charlotte both awarded to Gus Ganster, Philadelphia.

The Standard-Coosa-Thatcher silver cup was not played for, but will be played for at the next annual tournament.

Editors
Charles H. Clark Vernon E. Carroll
Clarence Hutton Douglas G. Woolf

EDITORIAL

We Believe
In the Conservation and Protection
of Domestic Industries

Second Annual Rayon Number

IN an industry whose scope and technique are developing so rapidly as is true in the case of the rayon industry, it is particularly important that there be developed a current literature which will check progress as it is made and will convey timely information to all those concerned with it.

For this reason, the editors of TEXTILE WORLD place particular emphasis upon their Annual Rayon Issues, the second of which is published this week. Following up the extensive quantity of material on rayon published in these columns week by week, these annual numbers consolidate the outstanding high lights and point the way to future possibilities.

For the guidance of the reader it should be pointed out that the Second Annual Rayon Number consists of three sections, one being devoted to general articles of broad interest, another to the uses of rayon in the various branches of the textile industry, and the third to a consideration of the technique of rayon processing from the standpoint of the textile manufacturer.

It is only six years ago that an annual output of 9,000,000 lbs. of artificial silk in the United States was reported in these columns. This year's estimate places the 1926 total at over 63,000,000 lbs. and forecasts a probable production of 80,000,000 lbs. in 1927. An industry which progresses so rapidly and so consistently deserves a constantly increasing literature of its own. It is the hope and belief of TEXTILE WORLD that its Annual Rayon Numbers will continue to form important contributions to this literature.

* * *

Passing of Claflin's

WITH the decision of Claflin's, Incorporated, to liquidate, one of the oldest landmarks in the dry goods district is to pass into history as a memory. Long identified with the North Street wholesale market the house has occupied a commanding position in the distributing field. In spite of the financial difficulties which befell the concern it has been continued by a board of directors including leaders in the dry goods commission trade in what is generally regarded as an efficient and conservative manner. That the liquidation process will result in 100 per cent returns to creditors and stockholders confirms this reputation for efficiency and conservatism.

Changes in merchandizing methods are going on rapidly in the textile industry and no one is in better position to recognize such changes and to realize their import than those associated with the sale of textiles in the primary market. Doubtless the conviction that the field was narrowing for such activities as those in which the house of Claflin was engaged, with no positive assurance of what the future holds in store have been instrumental in persuading Claflin directors to adopt the liquidation plan. That the house could have continued for a good many years without being forced to close its doors seems altogether likely, but it would have been a period of restricted existence and of declining profits in all likelihood. As it is, business will be discontinued at a time when stocks are not large and when the opportunity for disposing of supplies on hand seems unusually favorable, owing to the fact that the stocks consist of salable merchandise, the majority of which is in general demand. Therefore, the elimination of this house as a market factor will not act as a depressing influence on the market such as it might have been at certain times in the past when the liquidation of its stocks would have tended to demoralize the situation, both in the primary market and at second hands.

This absence of stocks is merely an illustration of present day methods in distributing channels. The jobber has ceased to function in many cases as a repository for merchandise upon which the retailer can draw at will. This is probably one of the reasons why the company's directors foresaw little prospect in the future for an expanding business for the house of Claflin and their decision to stop while conditions were favorable to such a step was undoubtedly a wise one.

The statement is made that one of the reasons for discontinuing the Claflin business is the increase in the sale of goods by mills' representations to the retailer, eliminating the middleman. Undoubtedly there is basis for this statement but the jobber himself is largely responsible for this situation. The commission man needs the jobber but if the latter is unwilling to take a reasonable risk and anticipate his requirements to a certain extent there is no reason why business should not be done with the retailer direct. One of the greatest problems confronting the textile manufacturer is how to operate his mill at a profit without knowledge as to the trend of demand for at least three months ahead. The necessity of buying raw material and supplies more or less in the dark without a basis for figuring on the percentage of productive capacity which should be operated provides an unknown quantity in the equation which makes its solution increasingly difficult.

There is a place for the jobber and we do not believe he is going to be eliminated as a class in the scheme of distribution, at least for some time to come. His permanency as an economic factor can be strengthened if he will consent to assume some of the responsibilities which rightfully belong to his division of industry, instead of trying by every means within his power to "heave the burden" upon other shoulders.

* * *

Should Capitalize Calamity (?)

FAILURE of cotton spinners and those whose interests are closely allied to extend sympathy of a practical character to cotton growers and allied interests, in what many of the latter characterize as the greatest calamity that they have ever faced, quite likely will be interpreted by growers and those whose financial interests are closely allied as being born of callous self-interest. At the risk of such characterization, and because it is so generally assumed that another crop in excess of 16 million bales must spell calamity for cotton growers and for general business, it may be well to see whether a third prospective large crop of cotton necessarily must have such serious results for the grower and allied interests.

In the first place, it should be realized that no one at this juncture knows what the ultimate crop is to be, and that actual selling of the crop by growers at current prices is just as highly speculative as the selling of futures on the exchanges. Furthermore, this selling by growers is not due to the latest Government estimates of the indicated size of the crop, but is confirmatory of very general estimates of the possible size of the crop that have been current in the South ever since the size of the record-breaking acreage planted was made public. Southern growers, bankers and spinners have realized for weeks that the acreage was large enough to produce a record-breaking crop even with a very low average condition, and, if they were misled by early low estimates of

THE TEXTILE TREND

Cotton Markets: Gray goods face the lower levels of raw material without flinching. More second hand offerings this week, but recession is orderly and spot situation fairly firm. Unusual movement of finished goods under way considering cotton slump. So far no reflection in better known brands. Cotton yarn buyers are wary but are active where yarn is needed. Bid and asked prices are irregular.

Wool Markets: American Woolen Co. opened a brilliant spring line of fancy goods for women's wear. Buyers' interest roused in this and other offerings. Reinstated fall lines are some up and some down. Men's wear situation improves at spot, but colder weather needed to clean up market. Generally better sentiment in both fields. Worsted outerwear yarns active; fair sales to men's wear mills; dress goods yarns improved but spotty.

Knit Goods Markets: Whether prices of spring underwear will be reduced as a result of the slump in cotton is interesting the trade. Sellers are not disposed to act but may meet soon to consider future. Spring trade meantime lags. Warm weather hinders spot development of the hosiery situation. No price changes reported. Sellers wonder as to stability of fancies for men's wear.

Silk Markets: Active demand noted for various qualities of weighted crepes and georgettes. Weighted goods at the present in a position that is making it difficult for the manufacturers of pure dye goods. Advances in wanted materials range up to 5c a yard as stocks are small. Raw silk firm.

the crop reporting board and based their cotton operations thereon, then they have only themselves to blame.

But assuming that the domestic crop should aggregate as much as 16,500,000 bales it would give us for the last four year period a smaller domestic and world production than for the four seasons from 1911 to 1915. The total domestic crop for the latter period was 59,687,000 bales and the world crop 105,345,000 bales. Assuming that this season's domestic crop is to be 16,500,000 bales, then it, with the last three crops, will aggregate 56,353,000 bales and the world crop for the same four seasons approximately 100,000,000 bales.

During the seasons from 1911 to 1915 it was only during the season 1914-15, and largely as a result of the world war, that prices averaged below 10c and below the cost of production then existing. During the three previous seasons the price range of New York spot middling uplands was from 9.20c to 14.50c and there was no general complaint of calamitous prices until the season of 1914-15. For six years thereafter domestic crops were of moderate size, ranging from a little over 11 million to 13 million bales, the latter for the season 1920-21 when as a result of general business depression cotton broke from around 40c to 11c and stimulated the raising of the phenomenally small crop of 1921-22 and the small crops of the two succeeding seasons. Since the season of 1921-22, as a result of expanding consumption and high prices, production has steadily increased and with the completion of this cycle the old economic law of supply and demand is making it plain to cotton growers all over the world, that, temporarily at least, production has exceeded consuming demand.

Owing to the marked increase in production costs it is quite probable that 12c is quite as unprofitable today for cotton as was 7c before the World war. Anything much less than 14c to 15c for cotton probably will be as effective in restricting production as was anything much less than 9 to 10c prior to 1914. But since 1914, and more particularly since 1921, the great majority of the more than one million southern cotton growers have won financial independence of cheap cotton; crop diversification and several years of highly profitable crops have wrought this change, and the South is not only in a better position than ever before to finance and to hold its surplus cotton if it so desires, but will be able to bear its losses without serious dislocation of general business. Twelve to 13c cotton will not be a calamity for the South, but a profitable lesson if its teachings are capitalized.

Irrespective of the volume of the current crop in excess of 16,000,000 bales there will be several permanent benefits for southern growers: cheap cotton will vastly increase demand from ultimate consumers and will open export markets that have been practically closed ever since 1914; it will prove more effective than any other factor in restricting the increasing exploitation of cotton growing in foreign lands; it will prove more effective than any propaganda in teaching southern growers the value of crop diversification.

It is a prime interest of every spinner to have an adequate world supply of cotton at stable prices that will return a fair profit to growers—prices that are neither abnormally high nor low. It is not reasonable to believe that spinners could wish that cotton growers should suffer the serious individual and tremendous aggregate losses incurred by the former in nearly every year since the business slump of 1920-21 with the possible exception of 1923. A great majority of spinners will wish that what now appears to be a calamity for growers may be capitalized into permanent benefits for both spinners and growers.

* * *

Wool Manufacturing Statistics

AN official announcement by the American Association of Woolen and Worsted Manufacturers contains the admission that the woolen industry is one of the most backward of the primary industries of the country in the matter of vital statistics and in definite and concrete knowledge of its own business. It is also acknowledged it is only a question of time when the force of these facts will compel cooperation in the assembling of these statistics for the benefit of the trade as a whole and to the economic advantage of each individual member thereof.

Therefore it is a matter of congratulation that meetings have been held by key men in the industry who have expressed unanimous approval of such an undertaking. It is to be hoped that the present endeavor marks the beginning of an intelligent effort to collate and disseminate this information.

Henrietta and Edna Mills Bought by Caroleen Securities Corp.

Caroleen Securities Corp., of which G. E. Huggins is president, has acquired the stock interests of Woodford & Morehouse, C. M. Woodford, W. S. Forbes, J. H. Thomas, K. S. Tanner and J. B. Pipkin in the Henrietta Mills, of Caroleen, N. C., and the Edna Cotton Mills, of Reidsville, N. C.

After the reorganization of the board Mr. Huggins was elected president and Robert L. Mitchell, treasurer. It is understood that in due course the sales agency of these two mills will be with the Farish Co., and that A. B. Haviland, who has been in charge of the export sales of these mills at Woodford & Morehouse, will become identified with the Farish Co. in a similar capacity.

Woodford & Morehouse issued the following statement: "C. M. Woodford, president of the Henrietta Mills, Caroleen, N. C., and of the firm of Woodford & Morehouse, announces that he and the members of the firm of Woodford & Morehouse have sold all their interests in the Henrietta Mills and the Edna Cotton Mills to the Caroleen Securities Corporation and that he has resigned as an officer and director of the two corporations.

"The firm of Woodford & Morehouse will dissolve partnership on Dec. 31, 1926, and the selling agency of the two accounts will be transferred as of that date.

"A. B. Haviland, of the firm of Woodford & Morehouse, who has been in charge of their export department, will go with the accounts."

Mr. Woodford, of this firm, has been in the trade for forty years or more and while he will retire from active dry goods business at the close of the year, he has other interests which will require his attention.

Gosnold-Page Selling Their Goods

NEW BEDFORD, MASS.—The Gosnold-Page management is now directing the selling of its goods, following the termination of the selling agreement with the Harding, Tilton & Co. firm. Harold D. Holmes, assistant treasurer of the Gosnold-Page plant, is in charge of the selling force. No successors have been named following the tendered resignations of Charles L. Harding as president and Charles M. Holmes as treasurer, of a week ago.

E. F. Taber Elected Treasurer of Booth Mfg. Co.

Edgar F. Taber has resigned as treasurer of the Fairhaven Mills to take up a similar position with the Booth Mfg. Co., where he succeeds Earl C. Miller, who resigned recently to become assistant agent at the Neild Mill. Ernest R. L. Haswell succeeds Mr. Taber at the Fairhaven plant.

Mr. Haswell has for several years been associated with the Fairhaven Mills, serving as clerk, and assistant treasurer.

TEXTILE CALENDAR

National Association of Cotton Manufacturers, Fall Convention, Copley-Plaza Hotel, Boston, Mass., Oct. 13-14, 1926.

Texas Textile Association, Annual Convention, Hotel Westbrook, Fort Worth, Texas, Oct. 15-16, 1926.

Associated Industries of Massachusetts, Annual Meeting, Copley Plaza and Westminster Hotels, Boston, Mass., Oct. 20-21, 1926.

Committee D-13 of American Society for Testing Materials, Fall Meeting, Hotel Cleveland, Cleveland, Ohio, Oct. 21-22, 1926.

Philadelphia Textile Manufacturers Association, Seventh Annual Dinner, Manufacturers Club, Philadelphia, Oct. 28, 1926.

Southern Textile Exposition, Textile Hall, Greenville, S. C., Nov. 1-6, 1926.

Southern Textile Association, Fall Convention, Greenville, S. C., Nov. 5, 1926.

American Association of Woolen and Worsted Manufacturers, Annual Meeting, Waldorf-Astoria, New York, Dec. 1, 1926.

National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, Dec. 6-11, 1926.

Second Southern Exposition, Madison Square Garden, New York City, Dec. 14-18, 1926.

Phila. Textile Mfrs. to Hold Annual Meeting

PHILADELPHIA.—The seventh annual dinner meeting of the Philadelphia Textile Manufacturers' Association will be held October 28 at the Manufacturers' Club. The principal speaker will be Frank B. Riley, of Portland, Ore. Chas. J. Webb is president of this organization; Millard D. Brown, chairman of the Board of Directors, Conyers Read and Roland Pollock, vice-presidents; J. Harold Felton, treasurer; Jos. W. Randall, secretary and C. Marlin Bell, manager. Headquarters are maintained at 3530 Kensington Ave.

Japanese Ownership of Chinese Mills Increases

WASHINGTON, D. C.—China had 118 cotton mills with 3,414,000 spindles and 25,934 looms operating and 174,000 spindles and 4,090 looms under construction in 1925, according to a list recently published by the Chinese Millowners' association, states the Textile Division, Department of Commerce.

Of this total 69 mills, 55% of the spindles and 63% of the looms were Chinese-owned; 45 mills, 39% of the spindles and 28% of the looms were owned by Japanese; and 4 mills, 6% of the spindles and 9% of the looms were British owned. Compared with figures for 1923 the percentage of Japanese owned spindles and looms has increased, while that of Chinese and British-owned mill equipment has decreased.

The Minds of the Many

Where there are many men and women there are many minds and many purses, and to meet each need there must be many fabrics. The American Woolen Company offers the largest variety of weaves and patterns to meet each individual taste and at a range of prices that suits every purse.

Demand American Woolen Company's fabrics for custom-made and ready-to-wear-garments.

American Woolen Company

"Makers of correct fabrics for men's and women's wear"

Selling Agency:
American Woolen Company of N. Y.
John W. Burrows, President

225 Fourth Ave.,
New York City.

"Advertising Creates Our Demand ...Kaumagraphs Protect It."

An interview with Mr. J. R. Howlett of Howlett & Hockmeyer, shows how this company insures full benefit from its advertising of Waterside Corduroys and Waterside Suedelike.

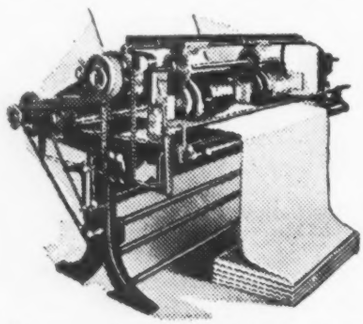
CAMPBELL puts its soups in cans that bear an unmistakable Campbell label. Huyler puts its candy in packages that have the unmistakable Huyler wrapper. But you can't put textiles, sold over the counter by the yard, into labelled cans or wrappers.

Yet what is the textile manufacturer to do? He must find some way to identify his goods. If he does not, how is the customer who asks for his goods by name to know that she is getting what she asks for? How is the manufacturer to prevent unscrupulous dealers from giving her something else which he represents as the genuine?

Couldn't Advertise Without It

How, indeed? If you want to know the answer, ask Mr. J. R. Howlett of Howlett and Hockmeyer. This company needs no introduction as manufacturers of Waterside and Suedelike Corduroys. Its products are among the biggest successes in the textile industry. And a large measure of its success is due to its advertising.

Yet to get the benefit of this advertising, Howlett & Hockmeyer



"Kaumagraphs can be applied by machine on the back or along the selvage"

had to find a way to trademark their goods and to trademark them as clearly, as simply and as unmistakably as the label identifies Campbell, the wrapper identifies Huyler.

A bolt of Waterside Corduroys showing the Kaumagraph-applied mark along the selvage

And Mr. Howlett found a way—the Kaumagraph Transfer method

The Only Practical Method of Trademarking

The Kaumagraph Transfer method is the only practical method of applying trademarks to corduroys, silks, cotton goods, woolens, hosiery and other textile fabrics.

With Kaumagraphs you can stamp your trademark on any fabric, in any color. Not a smudgy, smeary mark, but a really beautiful mark that won't blur or discolor.

It is by this method that the trademarks of Waterside Corduroys and Waterside Suedelike are applied along the selvage to every yard of the material.

"We felt it was necessary," says Mr. Howlett, "to identify our goods in this way, in order to prevent substitution of inferior cloths, to get the benefit of our national advertising, and as a means of protection to our customers and ourselves. For in our advertising, we tell customers to look for this trademark to make sure they get the genuine. The Kaumagraph Transfers are put on by machine as part of another operation. We have been using them for 7 or 8 years and find them highly satisfactory."

Kaumagraphs can be applied by machine on the back or along the selvage; by hand in one second as an end stamp; or on the toes of hosiery at the rate of a dozen a minute.

A Twin Service Without Parallel

Kaumagraph's Service Department offers you a helpful, untiring assistance in designing or applying a trademark, Kaumagraph's Lithographic Department offers unequalled service in quality and prompt deliveries, on such lithographic requirements as board end labels and hosiery packing.

This Twin Service is without parallel—only Kaumagraph offers it. We urge you to send the coupon below today for samples of our Lithographic work and of Kaumagraph Transfers, to learn how Kaumagraph's Twin Service can serve you.

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T.W. 10-9

Raw Cotton Is Nearing Bottom

No Indication That Prices Will Remain Long Below 14c Basis for New York Spots—Carryover Situation Similar to That of 1921—Comprehensive Summary of Favorable and Unfavorable Factors—Yarns and Goods Will Probably Sag Further, but Not in Proportion to Cotton

THE gist of the situation in cotton is the fact that raw cotton, in view of the prospect of a second large crop and further additions to the carryover of American cotton, is selling at the lowest price since the summer of 1921, while the demand for cotton textiles has shown considerable improvement and the margins of the manufacturers have increased.

The worst thing about the situation is the demoralizing effect of the instability and uncertainty of cotton prices. As the Analyst has pointed out for a good many months, nothing would be more helpful than a general reduction in the cost of textile raw materials. The fact that raw cotton had by June fallen to a normal relation with the general level of commodity prices and with wool, was undoubtedly a benefit, and this benefit was further increased by the fact that raw cotton was also more nearly in a normal relation with the prices of yarn and cotton cloth.

Any sudden, sharp change in values, however, is disturbing and a precipitate break of $7.00 a bale in the price of cotton is bound to have its unfavorable effects upon the industry. It is the Analyst's opinion that ultimately the situation will work out for the benefit of the industry. As soon as a fairly stable level is attained in the cotton market (even if that level were as low as 12c) it will be found that the demand for cotton textiles will be stimulated and the manufacturers of yarn and cloth will be in a position of supplying increased quantities at more favorable margins than have existed in the industry since early 1922.

Severe Depression in Cotton Industry not Likely, Despite Sensational Declines in Raw Price

As we see it, there is little prospect of any material recovery in the price of raw cotton. The inevitable recovery from the excesses of a bear movement will come, but low prices are assured. The situation in some respects resembles that which existed in 1921. In that year the crop was only 7,954,000 bales, but the carryover was 9,944,000 bales, making a total of 17,898,000 bales. The world consumption of American cotton for the year ended July 31, 1921, was only a little over 10,000,000 bales. Thus we were confronted by a possible excess of supply over consumption of approximately 7,700,000 bales and the price of spot cotton at New York fell to an average of 12c in June, 1921.

Textile World Analyst

An analysis and forecast by Dr. Lewis H. Haney, Director, New York University, Business Research Bureau, who considers various branches of the textile industry from week to week. The conclusions reached in the Analyst are mostly forecasts and generally apply to a time two or three months ahead. The Analyst is based on statistical data and does not reflect temporary trade sentiment.

SUMMARY—COTTON

1. The bearish factors in the cotton market are predominant. No such recovery as occurred in 1922 is to be expected in 1927.

2. Raw cotton is nearing bottom, however, and does not seem likely to remain long much below 14c in the New York spot market.

3. Yarn and goods will sag a little during the near future, but goods relatively little, and neither is likely to decline in proportion to the drop in cotton.

This year we are confronting a crop of at least 15,810,000 bales with a world carryover of American cotton of 5,750,000 bales, making a total prospective supply of 21,560,000 bales. The world consumption of American cotton for the past season is estimated at only 13,730,000 bales, which leaves ***an excess of supply over consumption for the latest known period of over 7,800,000 bales, or a little larger than in 1921.*** At this writing the price of spot cotton at New York has fallen to 13.55c.

Allowing for exports, imports and consumption during August, there was an apparent supply in the United States available for export and consumption during the eleven months remaining of the season of 18,474,000 bales, or an average of 1,679,000 bales per month. This compares with 1,540,000 a year ago and 1,085,000 at the same time in 1924.

In view of these facts, the questions that naturally arise are, Will cotton fall as low as in 1921 and if so, will it recover as in 1922? What price will be sufficiently low to equalize the supply and the demand?

While freely admitting that it seems possible that cotton might fall to the 12c level, it is still our judgment that this is not probable. ***World stocks of American cotton are not as large as they were in 1921 and the stocks in United States mills and warehouses are much lower than in that year.*** The ratio of mill consumption in this country to the immediately available stocks is considerably higher than in 1921. There is now no such prospect of a severe major depression in industry as occurred during 1920 and was at its worst in 1921.

Favorable Factors

The factors tending to support cotton values at present are as follows: (1) The crop is very late with proportionately great danger of damage by rain, frost, and insects. (2) The price of cotton is low enough to discourage picking and tend to cause holding. (3) The price is already low compared with other textiles and with the general level of commodity prices and this will soon encourage investment buying. (4) Mill stocks are fairly low; spinners have been proceeding cautiously. (5) The demand for textiles is good and the mills are to a considerable extent sold well ahead. (6) Stocks of cotton goods have been materially reduced and considering the season the stocks of finished goods are the lowest since January, 1925. It does not seem probable that the mills will overproduce.

The Less Favorable

On the other hand, we do not see any reason to expect any large sustained recovery in raw cotton prices, and ***think that 14c for middling spot cotton at New York would be about the price which would come nearest to equalizing demand and supply. Clearly the final price must be low enough to discourage the scraping of the fields for this year's crop and the planting of a large acreage next year, and at the same time to encourage consumption.***

The bearish points are as follows: (1) Under the influence of recent favorable weather a large crop is probable,—one which may reasonably be expected to run near to 16 million bales. (2) There has recently been a very rapid movement into sight and a large increase in visible supply. This is likely to continue, as the first

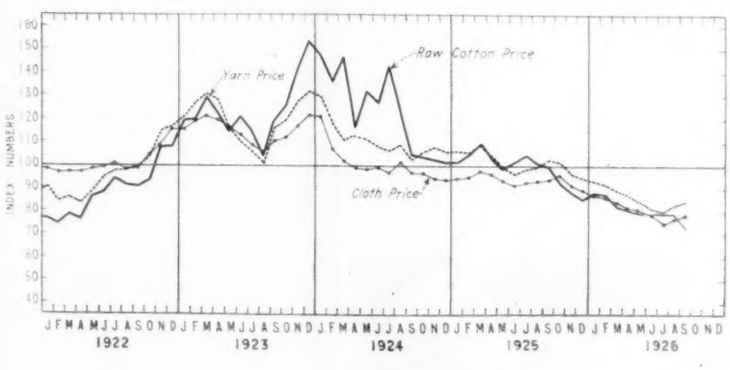
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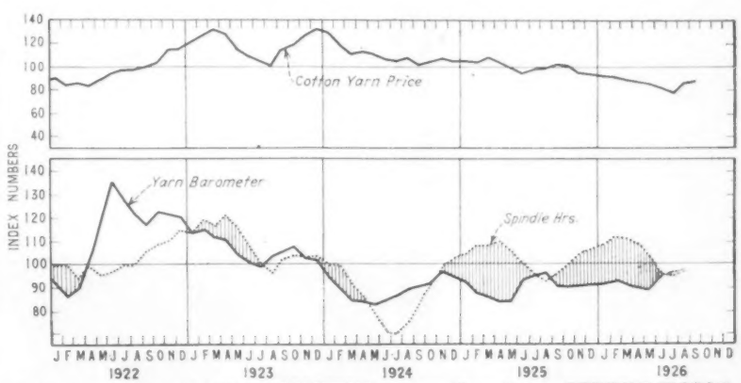
Fig. 1. PRICE SPREADS—TEXTILE WORLD index numbers, average 1921–1925 = 100.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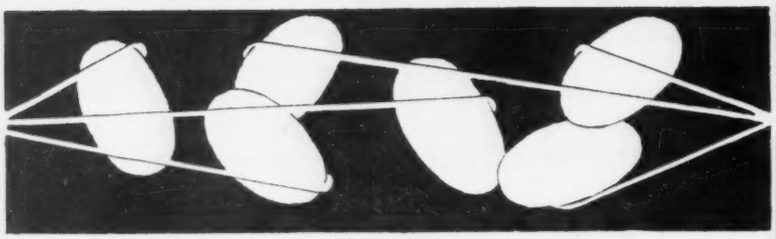
1923
1924
1925
1926

Fig. 2. COTTON YARN BAROMETER—Cotton Yarn Price—TEXTILE WORLD Index. Spindle Hrs.—Three-month moving average (Dept. of Commerce). Yarn Barometer—Based on orders for cotton cloth. Average of recent years = 100 for all indexes.



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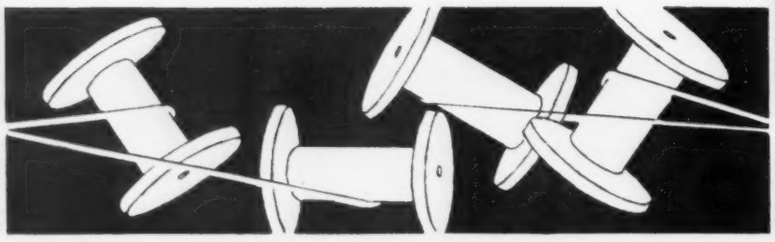


effects of the declining price tend will be to cause the growers to hurry picking and selling with the idea of catching the market before it goes lower. (3) Exports for the season thus far are less than last year and the consumption of tire fabrics is under a year ago. (4) While the demand for cotton textiles has been improving, there is no prospect that it will be sufficient to support the price of the raw material in view of the large supply. Buyers' needs are reported to be well supplied for the present. (5) The sales of New York cotton jobbers and commission houses in August do not indicate any such volume as would tend to cause an advance in prices under the circumstances. The New York jobbers' sales increased less than usual for the month and commission house sales were below the levels of August, 1924, or 1925. In this connection, also, we note that while orders for finished goods were relatively high in comparison with billings, they were comparatively not as high as in the last three years. (6) The Indian jute crop is large, affecting the demand for bagging. (7) English cotton spinning is depressed and sharply curtailed.

Taking everything into consideration, therefore, the chances appear to favor a little further sagging in the raw cotton market until the first rush of southern selling is over and some confidence is restored among buyers of cotton and of cotton textiles. Barring unforeseeable weather conditions it hardly seems possible that the price can recover to and be sustained above 15c. N. Y. spot middling. It seems more probable that cotton will fall to 13c. It seems most probable of all that it will fluctuate around 14c.

Demand for Yarn and Cloth Relatively Weaker But Margins Improve

As forecast by our yarn barometer the yarn price index advanced in August and September and the average for September was 84.7% of the 1921–5 average, against 79.9 in July and 102.4 a year ago. The trend was downward in the latter part of September, however, and a decline is almost certain in the October average.

At present the rise in the yarn barometer line has been checked. The index for the month of August actually declined and the average for the three months ending in August was little changed from that for the three months ending in July. The tendency of consumption and spindle activity to increase, moreover, suggest that productive activity may be tending to run above the demand as indicated in the yarn barometer, and if this suggestion is verified by the September data it would be an unfavorable indication. ***We foresee little or no recovery in yarn prices and consider that they will sag a little during the next month.*** Spinners' margins are considerably above the low resistance levels and though in September such margins were hardly satisfactory, they were the best since the end of 1925. Yarn prices in September were clearly higher in comparison with raw cotton than they have been at any time this year, and were well up to the average of the last five or six years in this respect. With cotton near 14c, yarn prices could be reduced 1c and still show a better margin than any time this year.

With cloth holding a part of the gains made from the low levels of last summer while cotton has fallen to new low levels, it is obvious that the cloth manufacturers' margins have improved considerably. They are still far from adequate, however, and ***in view of the reduced stocks and moderate production, it is certain that cloth prices will not decline in proportion to the price of raw cotton and the outlook for the manufacturers is materially improved.***

TEXTILE WORLD Cotton and Wool Index Numbers

COTTON INDEX NUMBERS

Date 1914	Cotton	Yarns	Gray Goods	Colored Goods	Aver. for Cloths	Group Average
July 31.....	100	100	100	100	100	100
1919						
January	235	278	280	295	288	279
April	228	221	228	238	233	226
July	283	321	372	292	330	321
September ..	236	314	350	315	331	319
October	278	324	387	320	351	337
1920						
January	314	448	464	411	435	427
April	339	531	498	416	455	460
July	327	425	405	423	414	407
September ..	253	290	300	413	359	335
October	190	229	248	362	308	282
1921						
January	131	142	176	203	190	175
April	97½	116	138	182	161	147
July	97½	112	133	176	155	141
September ..	148	160	172	194	184	175
October	160	179	198	208	203	193
1922						
January	146	168	174	206	191	182
April	144	156	168	209	189	178
July	178	182	190	200	195	189
September ..	171	186	194	195	194	189
October	177	192	206	201	203	197
1923						
January	225	225	220	230	225	225
April	231	239	224	242	233	234
July	217	197	190	236	212	211
September ..	224	215	207	224	215	216
October	237	222	212	225	219	219
1924						
January	278	241	228	243	236	239
April	220	211	192	194	193	198
July	270	198	186	191	189	196
September ..	197	191	188	190	189	190
October	195	196	187	189	188	199
1925						
January	192	197	195	173	184	187
April	196	194	193	180	187	188
July	197	183	185	176	181	182
September ..	189	191	192	174	183	185
October	174	189	193	178	186	186
1926						
January	167	175	177	162	170	171
February ...	165	172	176	160	168	169
March	155	166	168	157	163	163
April	153	163	161	153	158	159
May	151	157	158	153	156	155
June	149	152	153	152	153	152
July	149	149	151	141	146	147
August	149	156	157	141	149	150
September ..	137	158	158	144	151	152

SEPTEMBER INDEX NUMBERS

THE cotton index numbers for September, being the averages for the four weeks of that month, fail to reflect the effect of the latest drastic decline in raw cotton prices. A comparison of the indexes for the fourth week of September with the highs since August 1, however, brings into strong relief the fact that the statistical position of yarns and cloths is so strong as to preclude any probability of a decline proportional to that of raw cotton no matter how much lower the staple may drop.

The cotton indexes for the fourth week of September, based upon averages for that week, were as follows: cotton, 120; yarns, 149; gray goods, 154; colored goods, 144; group average, 148. Cotton was 32 points below the high for the previous four weeks, while yarns were only 13 points lower, gray goods 7 points lower and colored goods 4 points higher. On the decline that has taken place since then yarns and cloths have shown proportionate resistance to the drop in cotton prices and the margins between them and cotton are today more favorable than for years.

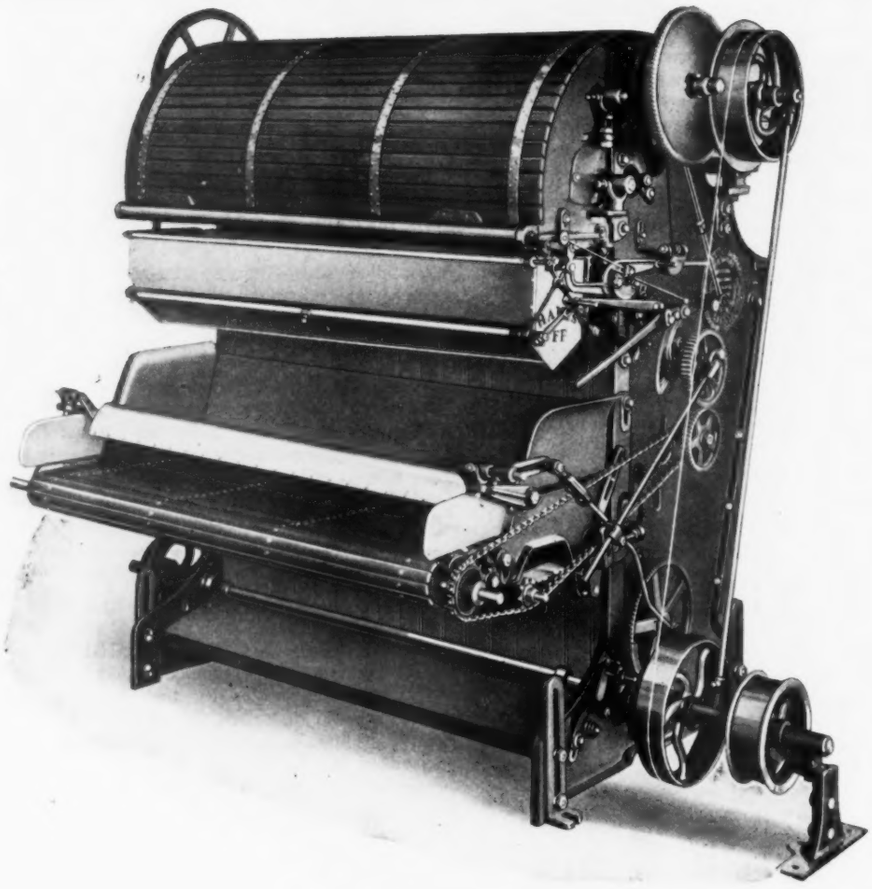
The previous lows for any month since the World war were touched June, 1921, with index numbers as follows: cotton, 100; yarns, 105; gray goods, 134; colored goods, 171; group average, 139. Compared with the fourth week of September it will be noted that the margins between cotton and gray goods were identical while yarns were relatively much lower and colored goods much higher.

The decline of one point in the wool group average during September was due entirely to completion of revision of cloth prices. At the end of the final week of the month wool and tops were 2 points higher than the average for August, yarns were unchanged and cloths at 209 were 3 points lower. There is every evidence that stabilization of prices from recent lows has been completed, and that manufacturers' margins remain abnormally narrow, particularly on tops and yarns. Additional proof of this statement is found in the lows touched by this group during 1921-22 which were as follows: wool, 107; tops, 132; yarns, 162; cloths, 182.

Inquiries regarding interpretations and use of the index numbers may be addressed to TEXTILE WORLD, Statistical Department, 65 Franklin St., Boston, Mass.

WOOL INDEX NUMBERS

Date 1914	Wool	Tops	Yarns	Cloth	Group Av'ge
July 31.....	100	100	100	100	100
1919					
January	272	296	290	237	273
April	242	282	273	237	253
July	269	290	238	237	272
September	284	332	378	237	291
October	286	338	384	240	294
1920					
January	304	335	412	310	636
April	276	334	448	331	352
July	241	258	384	320	315
September	199	224	320	311	285
October	189	213	302	304	276
1921					
January	129	148	186	224	193
April	120	148	177	192	173
July	112	139	172	192	170
September	107	132	165	189	165
October	114	135	162	188	165
1922					
January	128	163	179	182	173
April	165	185	185	184	182
July	189	202	196	188	193
September	192	202	199	190	194
October	199	209	208	191	199
1923					
January	212	225	227	203	213
April	222	230	234	225	228
July	222	223	233	228	227
September	210	215	228	223	222
October	205	213	222	224	220
1924					
January	217	227	221	223	223
April	216	230	223	219	221
July	191	209	212	219	213
September	217	226	217	221	220
October	227	237	224	226	228
1925					
January	264	268	253	228	244
April	219	234	230	241	238
July	216	217	216	239	227
September	213	209	212	227	219
October	216	212	212	227	220
1926					
January	215	213	211	229	221
February	209	208	208	226	217
March	198	199	204	224	212
April	181	193	198	224	208
May	177	191	192	224	206
June	173	183	188	220	202
July	173	184	189	215	199
August	176	181	190	212	198
September	177	182	190	209	197



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THE PERSONAL PAGE

Victor M. Montgomery, president and treasurer of the Pacolet (S. C.) Mfg. Co., has accepted the office of treasurer of the Whitney (S. C.) Mfg. Co. He succeeds A. S. Thomas who resigned in order to devote his entire time to the superintendency of the Whitney mill. Mr. Montgomery will continue as president and treasurer of the Pacolet.

A. H. West, formerly president of the Co-Ed Knitting Mills, Philadelphia, has severed his connection with this concern. He has not as yet announced his future plans.

Chas. J. Webb, head of Chas. J. Webb & Sons Co., Philadelphia, the Woolen Corp. of America, New York, has sailed from New York for South America on a combined business and pleasure trip which will last for three months. Mr. Webb stated this was the only important wool growing section of the world that he had not visited and he will land at Buenos Aires and spend some time in the wool growing sections and later he plans to cross the Andes mountains and visit Valparaiso, Chile. From this port he will start northward, sailing through the Panama Canal on the homeward voyage.

Donald W. Whittier has been elected president of the Pioneer-Pacific Worsted Co., Long Beach, Cal., succeeding B. T. Dyer, who resigned that office but remains a member of the board of directors.

At a meeting of the Gaston County Textile Manufacturers Association held at Gastonia, N. C., last week, Arthur M. Dixon, of Gastonia, was elected president; A. H. Huss, of Cherryville, first vice president; J. H. Separk, of Gastonia, second vice president. R. Grady Rankin, A. K. Winget, Robert Goldberg and Fred L. Smyer were elected directors for three-year terms. The hold-over directors are R. F. Craig, W. T. Love, W. B. Rhyne, and Carl A. Rudisill for one year and Stuart W. Cramer, Sloan M. Robinson, S. P. Stowe and R. B. Suggs for two years.

Eugene H. Griffith, vice-president and general manager of the Ohio Rubber & Textile Co., Detroit, Mich., has been elected vice-president of the Ohio Carpet Co., West Warren, Mass., a new $100,000 corporation.

Miss Antoinette Phelps Cheney, daughter of Horace B. Cheney of Cheney Bros., South Manchester, Conn., and Frank W. Crocker, of Boston, were married at the Center Congregational Church, South Manchester, Oct. 2, Rev. Dr. Peabody, assisted by Rev. Watson W. Woodruff, officiating.

Edwin Corning, treasurer of the Albany (N. Y.) Felt Co., was nominated for Lieutenant-Governor at the Syracuse convention of the Democratic state organization. He was also re-elected chairman of the Democratic State committee.

Edward F. Hull, head of the Samuel E. Hull Co., Millbury, Mass., cotton and woolen waste, announces the marriage of his daughter, Jennie Phyllis Hull and Frederick Winslow Rice, Jr., Boston, will take place in the Millbury Federated Church on Oct. 16.

Max Delfiner, the first man to start a modern textile plant in Palestine since it became a semi-independent state under British supervision, arrived in New York recently on the S. S. Columbus. His silk mill, in which he employs more than 200 operatives, is prospering, he said. Mr. Delfiner is in this country to study manufacturing methods.

G. A. Feuerstein, secretary of the Pennsylvania Knitting Mills, Inc., Philadelphia, and one of the organizers of this concern, has resigned, effective Nov. 10.

George K. Morris, of A. V. Morris & Sons, Amsterdam, N. Y., was unanimously reelected chairman of the Republican State committee at the recent convention in New York.

Nelson C. Clouette, retiring superintendent of carding, of the New Hampshire Spinning Mills, Penacock, N. H., was born in Canada, going to Wauregan,

Nelson C. Clouette

Conn. at the age of 12 years and entering the employ of the Wauregan Cotton Co. He held this position for 14 years, leaving there to go to the Amoskeag Mfg. Co., Manchester, N. H., as a card grinder. His promotion was rapid from card grinder to secondhand, from secondhand to expert fixer and from fixer to overseer, being the first French Canadian ever made overseer for the Amoskeag Mfg. Co. This position he held until Oct. 1, 1901, when he went to Penacook as superintendent of carding under the management of Marcellus Gould, president and manager. Mr. Clouette has designed several patents. He has worked continuously for the New Hampshire Spinning Mills for 25 years. He is 73 years old and is retiring in good health to enjoy the fruit of his labors.

Alfred Newman has been appointed foreign representative of Brewer & Co., Inc., Worcester, Mass., with headquarters at Shanghai, China. He comes from Rochester, N. Y. and succeeds George W. Nelson, Worcester.

Thomas Kenny, Ottawa representative of Greenshield's, Ltd., of Montreal, sales agents for numerous textile manufacturers, and Miss Margaret Johnstone, of Ottawa, were married recently.

Harold W. Gould, who has been associated with Henry W. T. Mali & Co., New York, for 16 years, has resigned to take effect on Dec. 31.

Harry Coslow, for 18 years with Wallach Hoexter & Co., New York, has resigned from that organization and became associated with the Woolen Corp. of America, in charge of a special department specializing in high grade fabrics for the jobbing and cutting trades.

A. H. Robertson, formerly of the W. R. Brock Co., Toronto, has been appointed manager and buyer of the woolen department of Greenshield's, Ltd., Montreal.

George E. Leighton, agent for the Barre Wool Combing Co., Ltd., South Barre, Mass., sailed from New York on Oct. 2 for a six weeks' European trip. He will first accompany his mother to Bradford, England.

John Ashmead, formerly manager of the Hodges Carpet Co., Indian Orchard, Mass., has become connected with the Tiffany Studios, New York.

Henry Blair has severed his connection with W. B. Davis & Son Co., New York, and will retire from the hosiery business. He will move to Winston-Salem, N. C.

Harry G. Hager has resigned his position as purchasing agent for the Palmer Mill of the Otis Co., Three Rivers, Mass.

Tim Harrington, superintendent of the plant of Powdrell & Alexander, Inc., Putnam, Conn., has moved to Killingly, Conn., where the main office of the corporation will be located. Mr. Harrington will be general superintendent of the three mills of Powdrell & Alexander in that vicinity.

Charles Reynolds has resigned his position as superintendent of the Higrade Yarn Mfg. Co., Stuyvesant Falls, N. Y., to take over the supervision of the yarn and cloth manufacturing plant at Clinton Prison, Dannemora.

Frank Burns, for several years assistant to William Harrop, superintendent of the Fisk Rubber Co's. plant at New Bedford, Mass., has been appointed general superintendent of the Fisk Rubber Co., with headquarters at Pawtucket, R. I.

W. J. Bauer, formerly superintendent of the Sylva Knitting Co., West Reading, Pa., is now superintendent in the mill of D. J. Lewis & Sons, Inc., Minersville, Pa.

R. J. Moers, superintendent for the Kinston (N. C.) Knitting Co., has resigned his position with that company.

Murray Gladstone, superintendent and designer for the Quinapoxet (Mass.) Mfg. Co. has resigned that position.

Charles Lawrence has taken a position as superintendent of the Ballou Mills of Powdrell & Alexander, Inc. (formerly operated by the Attawaugan Co.), Ballouville, Conn. Mr. Lawrence comes from Hillsgrove, R. I., where he held a similar position.

B. R. Burnham, superintendent of the Whitney (S. C.) Mfg. Co., has resigned that position.

T. G. Orr, formerly with the Kinston (N. C.) Cotton Mills, has taken the position of general night superintendent of the Marlboro Cotton Mills, McColl, S. C.

James A. Andrews, superintendent of carding and spinning for the Pepperell Mfg. Co., Biddeford, Me., for the last ten years, has severed his connections with that company.

J. O. Epps, overseer of No. 2 carding, has been promoted to night superintendent of the plant of the Carolina Textile Corp., Dillon, S. C.

Paul Dennet, of Woonsocket, R. I., has been appointed superintendent of carding and spinning for the Pepperell Mfg. Co., Biddeford, Me.

Thomas Rostran, formerly chemist of the British Dyestuffs Corp., Ltd., Montreal, severed his connection with that firm to become manager of the Palatine Dyestuff & Chemical Co., also of Montreal.

James F. Haggerty has taken the position as office manager at the plant of the Union Mills, Inc., St. Johnsville, N. Y. He succeeds the late M. R. Snell.

Alfred Knighton and John A. Miller, overseers at the Wamsutta Mills, New Bedford, Mass., will receive a trip to the National Safety Council's annual congress in Detroit Oct. 25–29 as a reward for their safety work at the plant. The award was made on the recommendation of William A. Dearborn, chief safety engineer of the Federal Mutual Liability Insurance Co. of Boston, who has been investigating the safety work of the various overseers during the last year.

S. L. Sword, second hand in the Jefferson (Ga.) Mills, has been promoted to overseer of carding and spinning.

R. A. Land has taken a position as overseer of spinning in the Warrensville (S. C.) Mill of the Graniteville Mfg. Co.

Henry Perreault has recently commenced his duties as overseer of weaving with the Edward Bloom Co., Putnam, Conn. Mr. Perreault formerly held a similar position in Allentown, Pa.

Burton Levee has been appointed superintendent of the finishing department of the Bailey Knitting Mills, Fort Plain, N. Y.

W. G. Froshamder, overseer of weaving for the Totokett Mfg. Co., Versailles, Conn., has resigned to accept a position in a southern mill.

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QUESTIONS AND ANSWERS

CORRESPONDENCE WITH READERS

Under this head, we undertake to answer, free of charge, to the best of our ability questions pertaining to textile matters received from any regular subscriber to TEXTILE WORLD. Inquiries should give the fullest information and data possible. In the case of damage to material, a sample should be sent. In this way answers can be given which will be of immediate technical value to the correspondent and to others in the same line. Inquiries pertaining to textile processes, machinery improvements, methods of management, the markets, etc., are especially invited as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith. The identity of those seeking information on technical subjects will not be disclosed.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

Letters expressing opinions or voicing criticism will be signed by the correspondent's name unless the letter itself contains a request that the name be withheld—EDITOR.

Short Fibers Make Bunches in Worsted Yarn

Technical Editor:

I would be very pleased if you could give me any help on the following matter: I am forwarding you samples of top and yarn. The counts are 2/30s spun from tops as per sample, blended as stated on tags. The yarn is far from even, being somewhat "bunchy." By that I mean that the short fibers have bunched themselves together in places. I have never spun any stock that has contained such an amount of short. The percentage of "fly" alone in the spinning equals 1½%. The fly has caused us so much trouble in the twisting that we have had to fit wire brushes against the tapes to prevent the waste accumulating on them, and thereby giving us slack twist.

Some time ago we made 2/30s from a similar top, excepting that it contained 30% Australian. In this case the yarn was beautiful and even. In fact, the customer complimented us on it, which is saying a lot these days. The layout all through the mill was identical in both cases. Can you suggest anything that would enable us to spin a more even yarn and one that would be more acceptable to our customer? Do you think iron carriers on the 4-spindle box or the reducers would help any in controlling the short and give us a better yarn?

The following are the particulars as to how the stock was run: Draft in gills 4¾; longest draft throughout drawing 5¾ (in the roving); single end up roving. Owing to composition of set we cannot run double. Oil added in gilling 2%, giving a total in stock of 4%. Ratch in roving 5⅜, increasing by eighths towards the gills. Nine operations, 36,000 doublings. Humidity in drawing 70%. Weight of roving 3.6 drams. Humidity in spinning 65 to 70%. Humidity in twisting 75%. The humidity quoted is of course relative.

We are not averse to altering the percentages of the various tops, or even leaving one out if necessary. I might say that we have tried shorter ratches in the drawing but with no better results. (5899)

We have examined carefully the three samples of top and sample of yarn submitted, and agree with you that there is too high a percentage of shorts in the top. There is no use trying to get an excellent yarn out of such a blend with a single end up behind the rover. We offer suggestions which should improve the yarn. Analysis of the three tops shows that No. 3 contains more "shorts" than the others, and naturally has a poorer staple. Careful stapling results in 5 in. maximum staple. This, however, would depend upon length after the stock has passed through the two-spindle gill box. Sometimes the staple lengthens and it is always better to staple there before deciding upon the ratches to use.

We believe that most of your trouble is due to overdrafting, short ratching on the heavy end, possibly a little excessive twist all through the set, and too open ratching on the fine end and in the spinning. In order to obtain 36,000 doublings you must overdraft this blend, and we also suspect that the gill boxes are overloaded. Once the fallers bunch the short fibers, no amount of doubling can overcome the evil. Where two ends are used behind the rover, higher drafts may be used in the drawing than when one end behind the rover is used. Indeed, a higher spinning draft is also possible. A draft of 5.75 at the rover, using single end, is too high for this blend.

Your relative humidity is also high for the Bradford system. Excessive moisture softens the wool and a poorer spin results. There is also less control between the back and front rolls due to the combination of moisture and oil, resulting in unevenness. More resistance is offered to the yarn due to the greater density of the air and the free ends of the fibers tend to fly out, producing a wilder yarn. This is not theorizing, but rather is the result of observing conditions during the "dog days" and artificial conditions introduced to prove why "bad spins" are so prevalent at that time, especially for maximum or limit spins.

You mention oil but do not state the kind used. We cannot detect by odor any olive oil on the top submitted and if you do not use it in the drawing just try one lot adding 2% of olive oil used as a 30% emulsion, stabilized with ammonia. It is much better to have the moisture in the top to begin with than to try to add it afterwards by means of excessive humidity. Temperature is important, but at the present time that is very satisfactory. Keep the room around 70 deg. to 75 deg. F., never lower, if possible.

We offer a layout as a suggestion which we hope you will try. If this does not improve the yarn, try the layout without No. 3-W.B. Lot 226, using 50% of No. 2-W.B. Lot 224. This layout is based upon a 2½ oz. top (320 drams for 40 yds.) and ten ends behind double can gill to allow for the blending. When running this, set the carriers on last three operations as near front roll as possible. This advice also applies to the spinning. Staple the roving carefully and barely exceed the length of staple at spinning frame.

Layout for Worsted Yarn

	Operation	Doublings	Draft	Drs. for 40 Yds. Wt. of End	Ratch	Remarks
1	Can Gill	5	4.6	348	Close	Front Roll Close to Fallers
2	2-Sp.Gill	4	4.6	302	Close	
3	Heavy Drawing	4	5.4	224	6 1/4"	Test and Open
4	Weigh Box	4	5.4	156	6"	Ratch if Ends Feel "Boardy"
5	Fine Drawing	4	5.2	128	5 3/4"	
6	Finisher	3	5.2	73.6	5 1/2"	
7	Fine Finisher	3	5	44.2	5 1/4"	Set Carriers Near to Front Rolls
8	Reducer	2	5	17.6	5 1/8"	
9	Rover	1	5	3.54	5"	

We suggest ratches based upon a 5-in. staple; if the staple measures 5¼ in. after the two-spindle gill box, use 5¼ in. at rover, then 5⅜, 5½, 6, 6¼, 6½ and 6¾ in. Too much tension between back roll and back line of carriers indicates short ratch and causes excessive breakage, which later appears as fly. Lots 2 and 3 are deficient in strength, a little tender in fact, and consequently short ratching and hard twists must be avoided.

Regarding the use of iron carriers, we believe that for fine wools they would give too much control. If tried at all, we recommend using them on the back line. Too much control will cause plucking instead of even drafting, and the result would be more broken fiber and a tendency to cause unevenness. A trial, however, should easily prove or disprove our contention. We rather stress the use of lower drafts and careful ratching, together with correct twists.

Asbestos Felts

Technical Editor:

In your issue of August 28, I note an article on hardening felts, which prompts me to ask you to please inform me how to harden asbestos felts. Any information will be greatly appreciated. (5898)

Hardened felts, as described in the recent article, refer to fabrics composed of wool, hair, and combinations of similar fibers. Animal fibers under the action of heat, moisture, a lubricant (such as soap), and intermittent pressure, proceed to adhere and interlock themselves into a permanent mass. Asbestos, although fibrous, is not a fiber. It is, however, sometimes mixed with hair and felted on a platen hardener. The principal parts of these machines are two flat, heavy cast-iron platens about 96 in. by 48 or 64 in., lying horizontally, and so constructed that one or both vibrate in a horizontal plane, 500 to 700 times per minute, with a stroke of ⅛ to ½ in. Water and steam are applied which together with the action of the platens compress and harden the fibers into a compact sheet. We doubt whether felt made wholly of asbestos fiber would respond to this hardening treatment, however.

The term "asbestos felts" is also applied to some forms of roofing paper and sheets. These are composed of asbestos fiber and paper or other material, or asbestos alone, and are hardened by passing in a warm and moist state between heated rolls, or under a heated plate press. Such products are hardly within the field of the textile industry.

* * *

Temperature for Drying Yarn in Skeins

Technical Editor:

In drying yarn in the skein, please advise what are the limits of temperature required for drying? Could you explain to us the best methods used in drying yarns? (5900)

Such an inquiry on drying yarns should tell a little more about the material in question. Lacking this information, the answer will be based on ordinary cotton yarns, but the same principles apply in a general way to all other yarns, extra precautions being necessary in some cases, particularly with some forms of rayon.

As to temperature, probably everyone who has had experience will say to dry at the lowest temperature that will give the desired production. Actually, very little drying is done by exposing to air at the ordinary temperature, while a great deal is done above 212 deg. F. From the standpoint of "feel" and ability to regain moisture, moderate temperatures are better. This is especially the case after

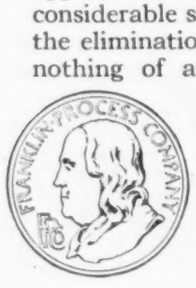
Handle Dyed Yarn as you handle Grey Yarn — From Creels

MANY years of experience in the textile industry have failed to disclose any more efficient method of getting grey yarn onto section beams than that of warping from spools in a creel.

Dyed yarn has been run onto section beams from the long chain, not because this operation is cheaper than warping from spools, but because long chain dyeing was the most efficient method of coloring yarn for weaving before the invention of the Franklin Process.

The Franklin Process makes it possible to put dyed yarn on section beams by the same economical process by which grey yarn is put on section beams. Yarn dyed by the Franklin Process is colored in the wound Franklin Package form. The Franklin Package is warped from a creel just like a spool of grey yarn.

Your experience in warping grey yarn makes you thoroughly familiar with the economy of this process. You can readily appreciate that the substitution of warping for beaming effects a considerable saving in winding costs, also that it makes possible the elimination of ball warping and beaming equipment, to say nothing of an important reduction in labor. Users of our service report a total saving in winding costs of 5 cents per lb. or more.



Our book, "The Franklin Process — Its Contribution to the Textile Industry," tells in detail just how this saving is effected. A copy will be sent to you on request. Your inquiry will obligate you in no way whatever.

FRANKLIN PROCESS COMPANY

Dyers of cotton, woolen, worsted, jute, hemp and linen yarns and silk noils, also yarn spinners and manufacturers of glazed yarns.

Main Office and Plant: Providence, R. I.
Branch Plant at Philadelphia

Central Franklin Process Company Chattanooga, Tenn.

New York Office 66 Leonard St.

Southern Franklin Process Company Greenville, S. C.

FRANKLIN PROCESS

Commission Dyeing of Yarn in the Wound Form

See also CONSOLIDATED TEXTILE CATALOG

Correspondence with Readers—Continued

bleaching, when excessive heat often turns the goods yellowish or brown. The higher the temperature, also, the more chance there is for damage from traces of chemicals left in the goods, like acids in cotton or alkalies in wool.

The term "best methods" is purely relative, for the quantity of yarn to be handled and the use to which it is to be put are the determining factors.

For moderate production, the ordinary truck dryers are very good. Trucks are loaded with poles carrying the yarn, then pushed into dryers properly equipped with steam coils and circulation fans. For larger production there are long continuous dryers. The wet yarn is fed at one end on poles, passes through and comes out at the other end still on the poles. Data on these two methods, including the latest improvements, can be obtained from manufacturers who advertise in TEXTILE WORLD.

Some plants have built-in dryers or dry-rooms which are constructed and operated largely according to their own ideas. In some cases the yarn is hung in the room on poles as it is processed through the day, and then dried at a moderate temperature during the night.

It is usually considered the best practice in all drying to use as much air circulation as possible in order to get high drying efficiency without too high a temperature. Too vigorous motion of the air, however, may tangle skein yarn.

* * *

Yarn Dyed by Random Process

Technical Editor:

We are enclosing herewith a sample of yarn, part of which is dyed red and part black. We should like to know how this was done. (5897)

The sample is a 2-ply woolen yarn and has undoubtedly been subjected to the process known as random dyeing. This treatment consists of dyeing one portion of the yarn one color and another a different color. It is carried out in several ways, of which the more common are: (1) Tightly tying skeins of yarn in one or more places and dyeing the material at one side of the tie with one color and at the other side with another. (2) Printing the color on to the skeins which are spread out on the blanket of the printing machine. (3) Placing cones or packages of the yarn on a suitable hollow spindle, piercing the yarn with an air-operated punch, and drawing dyestuff through these pierced holes by suction. (4) Piercing the yarn cones or packages with an injecting needle (similar to the surgeon's hypodermic needle but much larger) and forcing the dye liquor into the yarn through the needle.

In the latter two cases the dye is absorbed by the yarn immediately surrounding the punch or needle, as the case may be, and a hit or miss coloration is formed on the yarn. The yarn may be knit directly from the cones on which it is dyed, without rewinding. From the appearance of the yarn sample, the writer would say that it was first dyed red, then wound on cones and lastly dyed by either (3) or (4) with a black dyestuff.

* * *

Agrees with Need for Better Training

NEW YORK, Oct. 2, 1926.

Editor, TEXTILE WORLD;

I'm writing to commend especially the editorial article in today's issue of TEXTILE WORLD, headed "Trained Salesmen Wanted."

Naturally in the brief space of an editorial you can but touch upon a few angles of the subject, but it is one that needs to be gone into thoroughly and deeply.

Not only are the large majority of present day salesmen totally unprepared for their immediate jobs, but in that fact lies the reason why there are so few sales agents who are really equipped in training, temperament, vision and experience properly to represent their mills. If the salesman is not properly grounded and trained, it cannot be expected that he will later become a satisfactory sales agent. And yet the salesmen constitute or should constitute the natural source of supply for sales agents.

I sincerely hope you will continue to give this subject attention. A series of articles designed to show what training and education are desirable in the various stages from the boy first entering the industry, to his ultimate arrival as a thoroughly equipped sales agent would in my judgment be helpful.

Very truly yours,
H. E. PEABODY,
Field Secretary,
American Association of Woolen and Worsted Manufacturers.

* * *

Percentage of Different Yarns in Knit Fabric

Technical Editor:

I am making cloth out of 1/60s combed peeler, 2/40s mercerized, 45s 50/50 merino. Now I want to know what per cent of 1/60s C. P. there is in that cloth? What per cent of 2/40s mercerized there is in that cloth? What per cent of 45 50/50 merino there is in that cloth? This cloth is made on a 14-cut Cooper 6-feed machine, and I am using 3 ends of 1/60s C. P., 3 ends of 2/40s mercerized, and 3 ends of 45s 50/50 merino. The merino and 1/60s C. P. go together. (5901)

We must assume first that the size of the 45 50/50 yarn is based on the worsted system of 560 yds. per pound. This makes the yarn equivalent to 30s, based on the cotton system of 840 yds. per pound.

$$45 \times 560 = \text{yards per lb.}$$
$$(45 \times 560) \div 840 = 30 \text{ cotton hanks per lb.}$$

We must further assume that all the yarns are used in the same length, which means that all six feeds are practically set alike.

If equal lengths of each yarn are used we can take one feed as using a definite length and every other feed will use a similar length. Take, for example, one feed using 840 yds. Then each size is used on three feeds, so we have three lengths of 840 yds. or three hanks of each.

Weight of Three Hanks.

Size	Equivalent	Weight
2/40s =	20s	3/20 lbs.
1/60s =	60s	3/60 lbs.
1/45s =	30s	3/30 lbs.
Total		18/60 lbs.

Of the total 18/60 lbs., 3/20 or 9/60 is 2/40s; 3/60 is 1/60s; and 6/60 is 1/45s.

Percentage of Yarns

Size	Fraction	Per Cent
2/40s	9/18	50
1/60s	3/18	16.7
1/45s	6/18	33.3

It is recognized that these yarns may not all be used in equal lengths. If this is so it is necessary to determine the yards of each used and the weight of this length, then total all the weights and find the percentage each is of the total.

For example, suppose when 36 in. of the 2/40s is used that only 35 in. of the 1/60s is required, but that 37 in. of 1/45s is used. Then for 840 yds. of 2/40s, there will be 816.7 yds. of 1/60s and 863.3 yds of 1/45s. Then we have the following tabulation:

Weight of Yarns

Size	Equivalent	Yards	Weight
2/40s	20s	3 x 840 = 2520	.1500
1/60s	60s	3 x 816.7 = 2450	.0486
1/45s	30s	3 x 863.3 = 2590	.1028
		Total	.3014

Percentage of Yarns

Size	Fraction	Per Cent
2/40s	.1500/.3014	49.7+
1/60s	.0486/.3014	16.1+
1/45s	.1028/.3014	34.1—
	Total	99.9

* * *

Breaking Strength of Rayon

Technical Editor:

Some time ago I had a copy of your 1925 Rayon Annual, in which there was an article on the breaking strengths of rayon. I no longer have the copy before me but, as I remember it, the strengths given were as follows:

Raw Silk	350 grams per den.
Acetate Rayon	130 grams per den.
Wood Pulp Rayon	150 grams per den.
Linters Rayon	170 grams per den.

Recently, I had occasion to use information of that sort and, on conferring with manufacturers of rayon, I find that they only claim a strength of from 0.70 grams to 1.60 grams per denier.

Do you suppose that there is a mistake in the placing of the decimal point in the article in your rayon number, or were the tests upon which that test was made based upon skein breaking rather than single thread breaking? Any further information you can give me will be deeply appreciated. (5888)

The table for strength in grams per denier of raw silk and three rayons, given in our 1925 Rayon Supplement, all have decimals after the first figure at the left, or as follows:

Raw Silk	3.50 grams per den.
Acetate Rayon	1.30 grams per den.
Wood Pulp Rayon	1.50 grams per den.
Linters Rayon	1.70 grams per den.

It was stated in the introduction to this table that the tests were for the best grades of raw silk and rayon. The tests were also made on the materials when in equilibrium with a standard atmosphere. Undoubtedly there would be a wide variation on different lots of the same manufacture and of course humidity differences would cause a wide variation in strength and stretch. The table that we published was furnished by Dr. W. F. Edwards, of the United States Testing Co., New York City.

Technical Editor, TEXTILE WORLD:

Dear Sir.—Your second answer to my inquiry received. The picture which you have attached explains this matter very clearly and it is thoroughly understood by the writer.

We wish to take this opportunity to thank you for going to this extra trouble that you did to clear this matter up.

Respectfully yours,
S. S. MILLER HOSIERY MILLS
(Signed) R. J. Kraft

Business Literature

BULLETIN No. 107; Jenkins Bros., New York, Boston, Philadelphia and Chicago.

Jenkins Bros., manufacturers of valves, etc., in bulletin Form 107, describe and illustrate the use of the Jenkins automatic equalizing stop and check (non-return) valve. This valve is of the non-return stop type, which modern boiler room practice advocates for use on each boiler when the power plant consists of two or more boilers. The argument for its adoption in industrial plants is that it contributes to boiler efficiency by equalizing pressure and to boiler safety by preventing the accidental turning of steam into a cold boiler in which men may be working. Illustrations show a layout of these valves on a battery of boilers while other cuts serve to illustrate safety and efficiency features.

RED-E-HALL PORTABLE ELECTRIC PIPE MACHINE; Hall-Will, Inc., Erie, Pa.

Catalogue and price list, illustrating and describing in detail the new Red-E-Hall Portable Electric Pipe Machine. This machine is manufactured by Hall-Will, Inc., Erie, Pa., and is especially adapted to all users of two-inch pipe and under. It is a new development in pipe-threading equipment which should be of interest to all pipe users, large or small. It is especially attractive to industrial plants where it is capable of performing a very distinct service. Exclusive features are described and illustrated. A copy of the catalogue and price list may be obtained by addressing the firm as above.

BULLETIN 1560; Hyatt Roller Bearing Co., Newark, N. J.

This bulletin contains data of value to engineers and draftsmen concerned with the designing or development of plant and production equipment. It is supplemental to other Hyatt publications in that it covers in one volume bearing applications to general types of industrial equipment. Aside from the conventional load and rating tables it includes formulas for determining bearing sizes for specific applications, suggestions for mountings—with drawings—photos of diversified Hyattized equipment, and construction details of all types of Hyatt roller bearings.

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THE TEXTILE MANUFACTURER

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NEW MACHINERY AND PROCESSES

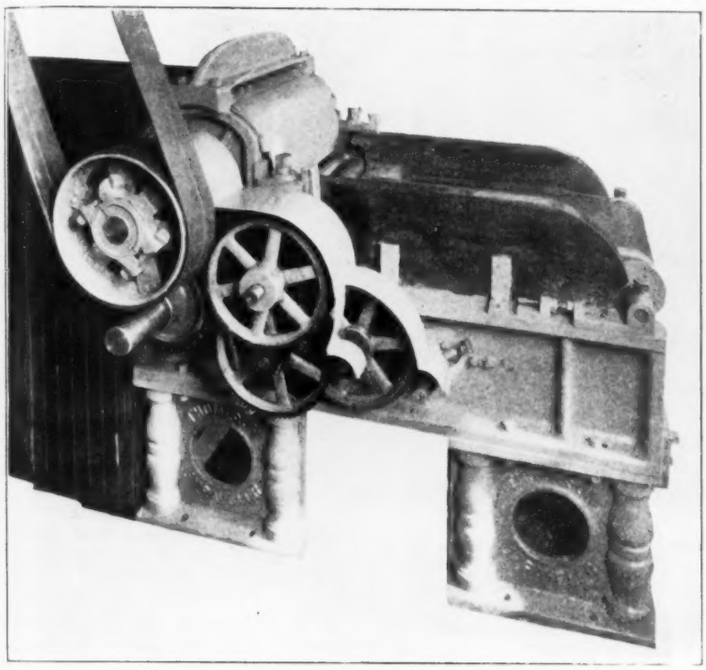
Machine Unravels Fabric

Fiber Obtained by Harmless Plucking Treatment

An interesting machine for reducing woven fabric to fibrous form, operating on a new principle, has recently been invented by Lewis Irvine Thompson of the Portland Woolen Mills, Portland, Ore. It is known as the "Thompson unraveller" and consists principally of two revolving star-shaped members, known as "segregators," which are made of hardened steel and attack both the top and the undersides of the fabric simultaneously. The circumference of the segregators intersect each other, and the angles in which the segments change create a plucking action. This action is gradually accelerated, so that there is no direct abrasion upon the fabric. These same segregators pass over and loosen each individual strand or thread of yarn in the fabric, so that when it is ejected it is not torn out forcibly from its fellows. The warp threads lie between these closely interlapped segregators, and create static electricity, which, with other factors, tends to remove the twist from the "ravelwool," which is the name that has been given the product of the Thompson unraveller.

This above phenomenon, with the plucking action, enlarges the gauge or diameter of the yarn, and the ends of the unravellings appear as though one had taken a thread of yarn between the fingers and untwisted and pulled it apart. This permits the "ravelwool" to be taken directly from the unraveller, and, after being lumped, placed upon the card, or in any stock mix, without further preparation.

One more point of advantage is the fact that the individual fibers of this product show under the micro-cope a comparatively straight condition, and are said to be much longer than the usual rag-picker shoddy. The straight formation allows the barbs to interlock through a twisting cohesion of the spinning process, making a clear and strong yarn.



Thompson Unraveller Which Separates Threads of Woven Fabric

It is said that the rags entering the unraveller need no preparation for successful operation. However, they may be dusted, cleansed, stripped, carbonized, or oiled if it is desirable. It has been found possible to run wet rag stock through the unraveller with the same results as are obtained with running dry oiled stock. This perhaps might make considerable saving in a woolen mill by eliminating the cost of oil and the labor of oiling. It might also eliminate the labor in drying the stock, as the stock could go directly to the dyehouse from the unraveller, or be later dried, if used directly in process.

The Thompson unraveller has a capacity about equal to an ordinary rag picker and is said to require considerably less horsepower to operate it. It has a feed apron or conveyor similar to a rag picker and uses two pairs of compression feed rolls that have the ability of absorbing unequal thicknesses through their feed without releasing their tension. Through the feed rolls the rags come into intimate contact with the revolving pair of segregators.

It is claimed that tests made on yarns spun from "ravelwool" show a gain of over 40% in tensile strength. Plans are now under way for the commercial marketing of this machine. United States and foreign patents are pending.

Drying and Finishing

Machines for Knit Goods—Spreading and Hanging

An improved automatic spreading and hanging machine with vertical loader pipe and spreader has lately been developed by the Grand Rapids Textile Machinery Co., Grand Rapids, Mich. It is designed for spreading and hanging tubular knitted fabrics in straight, even loops, preparatory to drying naturally in a room or by forced circulation of heated air. It may be used in conjunction with the Shields system of drying, which handles various weights of fabric in the same dryer, giving the desired time for each.

With the new machine it is claimed that little space is required, the operation is simplified, and the fabric is drawn over the spreader straight, with even tension. The spreader is of a new design and opens the stitch so that drying is uniform and requires less heat, making soft and elastic fabric. The fabric is started over an overhead reel and loads itself on the pipe by its own weight. No loader is required, and this feature proves to be valuable in handling rayon and other light-weight materials which require careful treatment. The loader pipe is surrounded by a metal housing which is hung through the floor by a cast collar and supports the pipe. The base of the housing revolves and is operated by a hand wheel located adjacent to the loader pipe to enable the operator to keep the fabric straight and free from twist. The loader pipe and housing can be of a length to suit conditions.

The hanging machine is equipped with direct-connected motor drive. The dowels on which the fabric is hung are fed from a hopper automatically and spaced the right distance on a rack from which the whole piece is conveyed to the dry room rack with a special truck. There is no handling with the hands from the time the fabric leaves the extractor until ready for the cutting room.

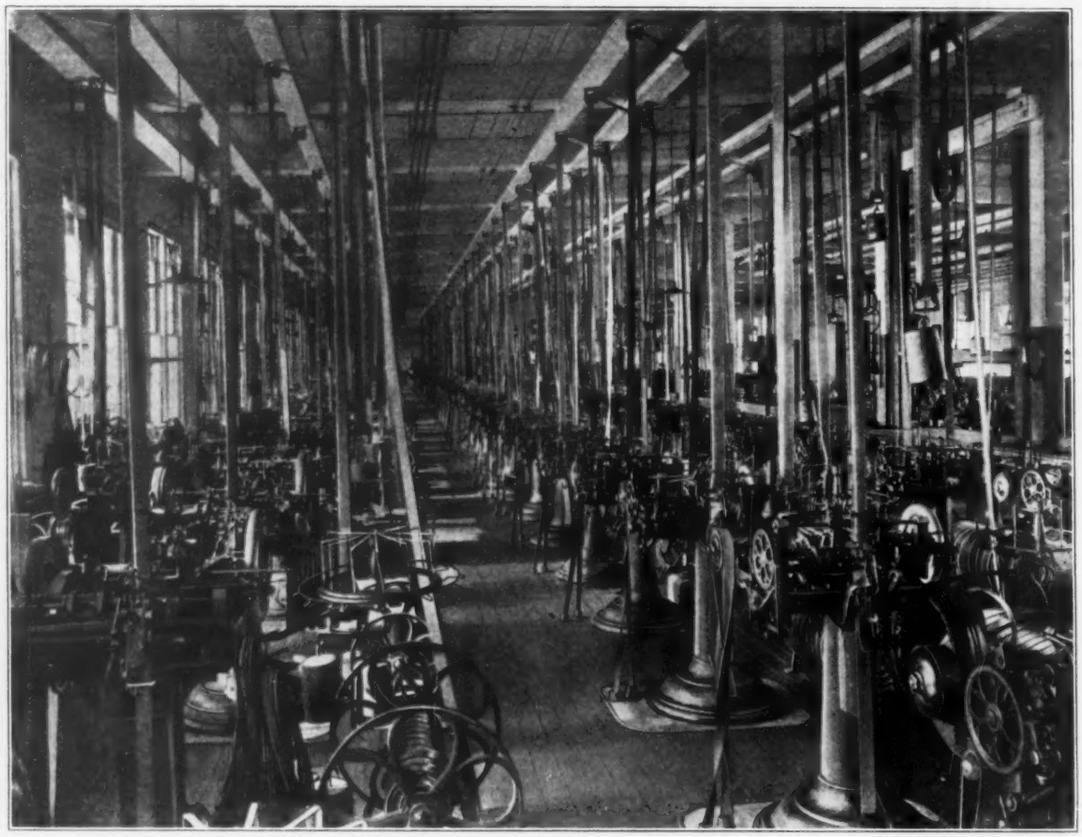
The dry room is fitted with overhead racks for hanging the fabric, tracks on the floor for guiding the truck, and ducts for conveying heated air to the lower end of the loops of fabric. This method insures uniform drying and shrinkage, requires less heat, and produces uniform fabrics. The heater coils and fan for supplying heated air can be placed in any convenient location and the air piped to the room. The same truck is used for removing the fabric after drying. Three pieces can be placed on the truck at one time, deposited on a rack and looped into a truck with a special unloading device, or fed directly into the finishing machine. The dowels drop into a hopper and are taken back to the hanging machine and used again.

Combination Finishing Machine

Another machine recently developed by the Grand Rapids Textile Machinery Co. is a combination finishing machine. In this machine have been incorporated certain methods which experience has proved successful for effecting various finishes on numerous mixed and rayon fabrics.

Live steam is sprayed into the fabric as it passes over the spreader to establish the width. A pair of driven feed rolls placed vertically on either side of the spreader assist in pulling the material along the sides of the spreader to prevent curved edges. The fabric continues through a pair of rolls which are heated with steam and covered with felt. It then takes a three-quarter wrap around a large roll which has its surface filled with small perforations and covered with a heavy felt padding. Steam supplied to the inside of this roll simmers through the padding into the fabric as it passes over. The construction of this roll prevents any water from condensed steam reaching the outer surface. Another roll of like size, steam heated but not perforated, and also covered with felt padding, acts as a dryer as the fabric passes over its surface. Provision is made for rolling the fabric into an even roll on a paper tube or looping it into a fold.

Finishing worsted and bathing suit material requires plenty of steam. The large perforated roll gives a long contact with the live steam and is effectual in eliminating curling. The looping attachment is valuable when finishing striped material to eliminate distortion of the stripes. By a simple adjustment the looper is made to stand idle if it is desired to finish fabric in a roll. Rayon can be given a dull or high luster. The various combinations of adjustments on the machine have the advantage of producing many finishes. The machine is made with and without the looper attachment and in widths to suit requirements. It is claimed that special care has been taken to produce a machine that will fill an all-round finishing job —with no danger of injuring the finest fabrics.



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NO. ANDOVER, MASS.

See also CONSOLIDATED TEXTILE CATALOG

MILL NEWS

COTTON

New Construction and Additions

*BURLINGTON, N. C. Holt, Love & Holt are making satisfactory progress in the construction of their plant, a one-story brick structure, 75 x 125 ft., and expect to have it ready for the production of wide novelty cloths by December. Fifty 81-in. looms will be installed for initial operations. Electric power will be purchased. J. S. Love and A. Glenn Holt will buy 12s to 30s single and ply yarns.

CHERRYVILLE, N. C. The Nuway Spinning Co., recently organized to take over the plant of the Vivian Spinning Co., has sold all of the equipment in the mill and have placed orders for 5,000 new spindles and auxiliary equipment for the production of fine combed yarns. The building is being renovated and improved.

*GASTONIA, N. C. The Priscilla Spinning Co. has purchased 5,000 additional new spindles which will increase the total spindleage to 20,000. It will not be necessary to build an extension as there is room in the present mill for the new machinery.

*LAUREL HILL, N. C. The Carolina Fabric Mills, Inc., recently noted incorporated with authorized capital of $200,000, have purchased the equipment formerly operated by the Vivian Spinning Co., at Cherryville, N. C., and will manufacture tire fabrics.

CARHART, S. C. At a meeting of stockholders of the Red River Cotton Mills here on Sept. 30 an issue of $100,000 of 8% preferred cumulative stock was unanimously authorized. This issue will bring the total authorized capitalization of the mills to $300,000, of which $200,000 is common stock and $100,000 cumulative. Capacity of the card room has been increased from 45,000 lbs. per week to 70,000 lbs. per week by the addition of a breaker finishing machine, 20 cards, 72 spindle slubers and four 108 S. P. intermediate frames.

*NEWBERRY, S. C. A large percentage of the stockholders of the Mollohon Mfg. Co. have ratified the deal with the Kendall Mills, Inc., and it is practically assured that at the time of the stockholders' meeting on Oct. 11 all the stock will have assented. They are planning to install some 8,000 additional spindles.

*NINETY-SIX, S. C. The Ninety-Six Cotton Mill has awarded contract to the Fiske-Carter Construction Co., Greenville, S. C., for erection of a three stories and a basement addition 245 x 125 ft. Work will begin as soon as materials can be assembled. This new building will house approximately 20,000 spindles. J. E. Sirrine & Co., Greenville, are engineers in charge.

WICHITA FALLS, TEX. The Western Textile Corp., organized by D. C. McIntyre, Wichita Falls, and associates, is said to be arranging an early call for bids for a proposed local cotton mill, to be two and three-story and basement, brick and reinforced concrete, reported to cost about $300,000, with machinery. It is said 10,000 spindles will be installed for initial operations.

*Indicates previous mention of project.

Fact and Gossip

TUSCALOOSA, ALA. About 350 bales of cotton stored in a frame shed near the Alabama Great Southern Railway station were destroyed by fire last week, with loss estimated at $25,000. The cotton was the property of local buyers and individual cotton growers.

PUTNAM, CONN. Powdrell & Alexander, Inc., whose lease on the former Mills No. 1 and 2 of the Manhasset Mfg. Co. at Putnam, expired last month, have discontinued operations there and will transfer machinery to their recently acquired plants at Ballouville and Killingly, Conn., which were formerly operated by the Attawaugan Co. Operations have already commenced in the latter mills. It is said new carding and spinning machinery will be installed at the Ballouville mills to replace the looms which will be moved to the Amesbury mill of the company.

HAWKINSVILLE, GA. Cochran Mill No. 2 which had been idle for about three months, recently started up its carding and spinning equipment.

CHICOPEE, MASS. The Dwight Mfg. Co. returned to full time production Oct. 4, employing day and night shifts.

*FITCHBURG, MASS The hearing on the petition of Charles T. Crocker for the appointment of a receiver for the Orswell Mills was postponed in the Superior court at Boston on Oct. 1 to Oct. 14 in Worcester, Mass., to see if in the meantime stockholders cannot save the situation and if means will not be devised to protect liens of creditors for cotton.

HOLYOKE, MASS. Mills No. 1 and 3 of the Farr Alpaca Co. started a new schedule of five days a week instead of four this week. The rest of the plant will continue running four days a week.

HOLYOKE, MASS. Officials of the American Thread Co., following a conference with city officials, announce that there will be no expansion of their Holyoke mills at the present time. Holyoke officials sought to secure development in Holyoke rather than have the company continue expansion in their new plant at Dalton, Ga.

DURHAM, N. C. The Durham Cotton Mfg. Co., East Durham, operating on ginghams, is running its mill at a little more than half capacity, which is better than for some time. The Erwin Cotton Mills, West Durham, which make sheetings and pillow cases, are now operating pratically on full time, as are the Pearl Cotton Mills, also making sheetings. The Yarborough Mills, Inc., Durham's new mill, operating on novelties, is running full time and has not had any slack time since it began operations about a year ago.

KINSTON, N. C. The Kinston Cotton Mills have resumed operations on full time employing 175 operatives. New boilers were installed in the plant during the shut-down.

MOORESBORO, N. C. At a public meeting of Mooresboro citizens held recently plans were laid for the establishment of a cotton mill. A Charlotte financier has offered to put up an equal amount of common stock for every dollar of preferred stock sold and it is believed that the company will soon be ready for a charter with $150,000 capital. An option has been secured on 20 acres of land, located on the Southern Railway and State Highway No. 20 where it is proposed to locate the plant.

SALUDA, N. C. A charter has been granted to the Saluda Towel Mills, with authorized capital of $100,000, to operate a textile plant. George H. Brokenbrough, Charlotte; Walter Thompson and G. R. Little, Saluda, are the incorporators.

THOMASVILLE, N. C. Amazon Cotton Mills, which discontinued night operations last June, resumed night work on Oct. 4.

PHILADELPHIA, PA. Application for a charter of incorporation of a company to be called Quaker Towel Mills will be made Oct. 25, to engage in manufacture of towels, textiles, etc. Solicitor making this application is Thos. A. McNab, Bankers Trust Bldg.

ANDERSON, S. C. The Ladlassie Mills, recently completed, are running full time during the day and part of the plant is being operated at night.

*TORONTO, ONT., CANADA. The Dominion Textile Co., Ltd., will not enter the rayon field as contemplated for some time. After giving careful consideration to the possibilities of rayon, the management decided against expanding along these lines. The company's mills are now operating at about 85% of capacity.

WOOL

New Construction and Additions

PUTNAM, CONN. The Waterman Worsted Co. has recently installed a new Tolhurst extractor and four new Crompton & Knowles automatic looms.

MARTINSBURG, W. VA. The Berkeley Woolen Co. has accepted final plans and awarded contracts for building a $200,000 plant addition to increase production 20%. The new building will be of brick, two stories high, 160 x 60 ft., and will be equipped with 18 new looms.

*TRENTON, ONT., CANADA. The first unit of the Trent River Textiles, Ltd., is now completed and running at capacity. This unit is a dyeing plant. When other units are completed the company will include the operations of spinning, knitting and weaving of worsted materials. It is stated that a deal is now being consummated which will involve over $500,000 of English capital for the enterprise.

Fact and Gossip

*LINCOLN, ME. The property of the Lincoln Worsted Co. has been sold by the First National Bank of Boston, trustee for the bondholders, to John F. and Charles F. Marble, of Worcester, and Lawrence M. Carroll, of Norway, Me., for $40,000. If the sale is approved by the court, Mr. Green, chairman for the bondholders protective committee, states that the bondholders will endeavor to sell the property immediately.

JEFFERSON, MASS. The Jefferson Mfg. Co. has started all the looms in the lower mill on a large order.

MEDWAY, MASS. Fabyan Woolen Co. started full time operations this week after running on a three and four day schedule for some time.

STAYTON, ORE. The Western Woolen Mills have been incorporated with capital of $100,000 by B. S. Clark, general manager of the Santiam Woolen Mills, Inc.; Glen Fox, until recently with Flieschner Mayer & Co., wholesale dry goods, Portland, and C. Andrews, of the Strong & McNaughten Trust Co. The new company has taken over the Santiam mills and will continue the manufacture of a similar line of products.

PHILADELPHIA, PA. Notice has been given the partnership between H. C. Ball and John M. Fries, trading under the name of H. C. Ball & Co., was dissolved as of Oct. 1, 1926. All debts owing to this concern are to be received by H. C. Ball at Main & Dawson Sts., Manayunk, where their knitting yarn spinning plant is located. The company has been located at this address for many years, having approximately 6,000 spindles.

*MAPLEVILLE, R. I. According to a recent statement made by Austin T. Levy, president and treasurer of the Stillwater Worsted Mills, the company is using its recently acquired plant at Mapleville as a means of rearranging its machinery, the new space enabling it to do away with such congestion in the other Stillwater mills as has developed with the growth of the business. The Mapleville mills will not be used as a means of creating additional output, only two more looms being added.

KNIT

New Construction and Additions

*FLORENCE, ALA. The Gardiner & Warring Co., Amsterdam, N. Y., has commenced erection of its new mill here, to be three stories high, 60 x 280 ft., of brick construction.

IPSWICH, MASS. The three plants of the Ipswich Mills at Ipswich, Gloucester, and Lowell are now operating at practically capacity. Additional machinery has been ordered to meet increased business.

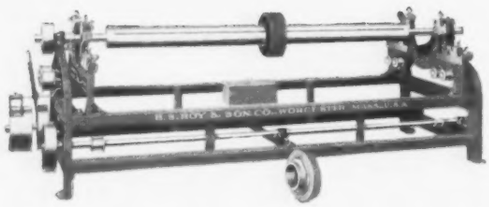
BURLINGTON, N. C. The McEwen Knitting Co. has announced that it will in the near future start the manufacture of full fashioned silk hosiery. Twelve new 42-gauge 20 section machines have been ordered and production will start by the first of the year. The output of this mill has been seamless hosiery heretofore and they will expand along this line as conditions warrant, developing the full-fashioned section as a new field.

MAYODAN, N. C. Washington Mills

B.S.Roy & Son Co.

Established 1868

Worcester, Mass.



Roy Improved Napper Roll Grinder

Six rolls in operation at same time.

Steady, positive traverse of the grinding wheel, because of the Roy patent differential motion on the journal end of the grinder. Bearings for holding rolls not only adjustable to grinder, but will take shafts of different diameters.

Complete information gladly sent to you upon request.

See also CONSOLIDATED TEXTILE CATALOG

FELT

Felts for Textile Needs

Not the least of the reasons behind the popularity of the felts made by the American Felt Company for textile purposes is the ***service*** rendered.

Years of experience in advising mill men what grade of felt to use for this or that installation—experience in answering scores of felt questions—these things count when felt purchases are to be made.

Specify American Felts—made by an organization of felt specialists.

AMERICAN FELT COMPANY

211 Congress St., Boston 114 . 13th St., New York City
325 So. Market Street, Chicago

FIG. 20.

OBLONG BASKET

Standardize on

LANE CANVAS BASKETS

For All Mill Operation

A Style for Every Use

W. T. LANE & BROTHERS

Manufacturers

POUGHKEEPSIE, N. Y.

The Babcock & Wilcox Co.

85 LIBERTY STREET, NEW YORK

ESTABLISHED 1868

Water Tube Boilers
Steam Superheaters
Chain Grate Stokers

BRANCHES

BOSTON, 49 Federal Street
PHILADELPHIA, Packard Building
PITTSBURGH, Farmers Deposit Bank Building
CLEVELAND, Guardian Building
CHICAGO, Marquette Building
DETROIT, Ford Building
CINCINNATI, Traction Building
ATLANTA, Candler Building
PHOENIX, ARIZ., Heard Building
NEW ORLEANS, 344 Camp Street
HOUSTON, TEXAS, 1011-13 Electric Building
DALLAS, TEXAS, 2001 Magnolia Building
DENVER, 444 Seventeenth Street
SALT LAKE CITY, 405-6 Kearns Building
SAN FRANCISCO, Sheldon Building
LOS ANGELES, 404-406 Central Building
PORTLAND, ORE., 805 Gasco Building
SEATTLE, L. C. Smith Building
HAVANA, CUBA, Calle de Aguiar 104
SAN JUAN, PORTO RICO, Royal Bank Building
HONOLULU, H. T., Castle & Cook Building

Mill News—Continued

have accepted plans for a sewerage disposal plant for the mills and the town of Mayodan and work will start immediately. It will cost $14,000.

SHILLINGTON, PA. Fairy Silk Mills, manufacturers of jersey silk glove cloth, silk knit underwear, etc., have awarded contract for a new mill building which will cost $35,000. It will be a one-story structure built on a site 85 x 150 ft. Contract has been awarded to L. H. Focht & Son, of Reading.

*BASSET, VA. The Basset Knitting Mills which started operations on Sept. 15, are now turning out 1,500 pieces of men's underwear weekly. By the end of the year, the plant will employ approximately 200 operatives.

RADFORD, VA. The Paul Knitting Mills, Inc., plan to install 50 additional knitting machines in their Radford plant.

Fact and Gossip

ROOSVILLE, GA. The Richmond Hosiery Mills are running full time. Demand for all products is said to be good.

LEBANON, N. H. The Everett-Norfolk Knitting Mills Corp. is running on a full time, full capacity schedule, and plans to hold to this production basis for an indefinite time.

CLAYVILLE, N. Y. The Clayville Knitting Co. is operating on full time day schedules with regular working force.

GLENS FALLS, N. Y. Clark Bros. manufacturers of silk gloves, silk jersey cloth, etc., increased operations during September and are now running on overtime schedules.

ILION, N. Y. The Sterling Mills are running overtime with an enlarged working force.

NEW YORK, N. Y. The Niagara Knitting Co., recently formed with a capital of $15,000, has succeeded to the business of the Niagara Knitting Mills, Inc., 29 W. 30th St. The new company is headed by H. Mayer.

NEW YORK, N. Y. Property of the Boulevard Textile Corp., 387 Southern Boulevard, will be sold by the receiver, Louis B. Wehle, on Oct. 8, 10:30 a. m., on the premises.

STOTTVILLE, N. Y. The Atlantic Mills are now operating on overtime schedules with an enlarged working force.

DURHAM, N. C. Most of the hosiery mills are operating full time, some of them running at night. Durham Hosiery Mills, however, still have some idle machines in the main mill and in some of the smaller mills. The Marvin Carr Silk Mills, one of the Durham hosiery chain, is operating day and night. The Chatham Knitting Mills Co., after a slack period in the summer, is now operating full time, making only cotton hosiery. The Golden Belt Mfg. Co. is running full time, with a heavy demand on its full fashioned output. So far as can be learned all the smaller hosiery mills are also on full time operation.

ALLENTOWN, PA. Swissonia Knitting Mills, manufacturers of ladies' cotton underwear and union suits, have filed a voluntary petition in bankruptcy in U. S. District Court at Philadelphia, listing liabilities at $46,733 and assets of $36,710. John G. Diefenderfer is referee.

*Indicates previous mention of project.

BANGOR, PA. Korn Bros., silk jersey cloth manufacturers, who acquired the plant formerly operated by Slate-Valley Fabric Co., Inc., have recently started operations in this mill, manufacturing Milanese cloth and dyeing, in addition to their main plant.

INTERVILLA, PA. The Model Underwear Co., Inc., has discontinued business permanently.

MILWAUKEE, WIS. The Everwear, Holeproof and Phoenix Hosiery Companies are running their mills at capacity. Sales of these firms show a substantial increase over last year.

MOUNTAIN PARK, ALTA., CANADA. S. Madsen has purchased the Carl C. Hansen Knitting Co.

SILK

New Construction and Additions

*WORCESTER, MASS. The Worcester Silk Mills Corp., recently noted incorporated with a capital stock of $250,000 pfd. stock and 5,000 shares of common stock without par value, expects to have its plant at 150 Fremont St. ready to begin operations about Dec. 1. Equipment will consist of 100 52-in. automatic box looms. As previously stated, Eric Muelberger is president and Harlan T. Pierpont, treasurer of the new company whose product will be sold direct through its New York office at 404 Fourth Ave. Raymond Shutt will be superintendent of the plant.

*PATERSON, N. J. The H. W. Silk Co., Inc., recently formed with capital of $50,000, started the production of tie silks, equipped with 12 looms, on Oct. 1. F. Joseph Hollritt is president and Otto Wallerius, treasurer.

PATERSON, N. J. The Floral Silk Co., Inc. plans the early rebuilding of the portion of its mill destroyed by fire Sept. 26, with loss reported at about $25,000, including equipment.

*ALLENTOWN, PA. It is reported operations will start in the new mill of Wahler & Dilcher Silk Co., manufacturers of crepe de chines, georgettes and taffetas, which has been erected here, about Dec. 1, doubling capacity of this concern. There is space for more than 100 looms in the new building.

STROUDSBURG, PA. Monroe Silk Mills, silk ribbon manufacturers, have installed additional looms in their plant here.

STRASBURG, VA. The Strasburg Silk Mill, owned by Fred Bertschinger, has been sold to the M. E. Binz Co., Midland Park, N. J. New machinery will be added to the present equipment of 64 looms.

*STROUDSBURG, PA. The A. R. K. Silk Mills, recently noted incorporated with authorized capital of $25,000, has started the manufacture of narrow ribbons in leased quarters on Kimmo St., with an initial equipment of 20 looms. Electric power is bought. F. W. Kimmerle is president and C. H. Rhodes, treasurer.

Fact and Gossip

PATERSON, N. J. The B. & Z. Silk Co., recently formed with a capital of $100,000, to manufacture broad silks,

Hitches his loom to a tree!

Oakite Service Men, cleaning specialists, are located at

Albany
Allentown, Pa.
*Atlanta, Ga.
Baltimore
*Boston
Bridgeport
*Brooklyn
Buffalo
Camden
Charlotte, N. C.
*Chicago
*Cincinnati
*Cleveland
*Columbus, O.
*Dallas
*Davenport
*Dayton
*Denver
*Des Moines
*Detroit
Erie
Flint, Mich.
*Grand Rapids
Harrisburg
Hartford
*Indianapolis
Jacksonville, Fla.
*Kansas City
*Los Angeles
Louisville, Ky.
*Milwaukee
*Minneapolis
*Montreal
Newark
Newburgh, N. Y.
New Haven
*New York
*Oakland, Cal.
Philadelphia
*Pittsburgh
Portland, Me.
*Portland, Ore.
Providence
Reading
*Rochester
Rockford
Rock Island
*San Francisco
*Seattle
Springfield, Ill.
*St. Louis
Syracuse
*Toledo
*Toronto
*Tulsa, Okla.
Utica
*Vancouver, B. C.
Williamsport, Pa.
Worcester

* Stocks of Oakite materials are carried in these cities.

HERE'S a scarf weaver at work in southwestern Mexico. Whenever he finds a customer for a gaily-colored scarf, he hitches his loom—worn on a belt—to a tree and goes to work! Soon the scarf is finished, and he is on his way to another customer.

An odd and strange procedure—that's the thought which perhaps comes to mind. Yet undoubtedly the same wondering comment might be made, in these modern times, of a textile mill where processes are fundamentally the same as they were a decade ago.

And while all mills have expanded and grown, in the natural course of events, a great number have forged far ahead of others through some simple change in their wet finishing processes.

On cotton goods, for example, mill men have found that the use of Oakite produces a softer, whiter, better finished product.

Cotton mills manufacturing hosiery, knit goods, sheetings, towelings, tickings, shirtings, bed spreads, ginghams, cotton duck, desirous of learning of the advantages of using Oakite, may obtain, without the slightest obligation, full information regarding the application of it to the wet finishing processes involved in the manufacture of these materials.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

OAKITE IS MANUFACTURED BY OAKITE PRODUCTS, INC.

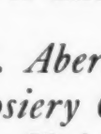
formerly **OAKLEY CHEMICAL CO. 42 THAMES ST., NEW YORK, N.Y.**

Everyone concerned with the production or sales of knitted fabrics will be interested in the exhibit of a complete Full-Fashioned Hosiery Mill in operation, in The Liberal Arts Building at the Sesqui-Centennial International Exposition.

This unique display is under the direction of—

Harry C. Aberle Co.
Apex Hosiery Co.
Berkshire Knitting Mills
Fidelity Knitting Mills
Hancock Knitting Mills
Textile Machine Works

You will be most cordially welcomed.



See also CONSOLIDATED TEXTILE CATALOG

Mill News—Continued

will be represented by Fred Bologna, 39 Camden St., Paterson, one of the principal incorporators. The other incorporators are J. Zorio and M. Metz Cohn.

PATERSON, N. J. The Empire Silk Co. is recruiting a night shift to increase production.

CHADWICKS, N. Y. The Standard Silk Co. is operating its branch plant here on full time day schedules with a normal working force.

NEW YORK, N. Y. Berizzi Bros. Co., raw silk dealers, and A. P. Villa & Bros., Inc., raw and thrown silks, have been consolidated under the name Berizzi Bros. Co., Inc., and incorporated under Delaware laws with capital of $1,101,100. The offices of Berizzi Bros. will be moved within a few days to 95 Madison Ave. where the Villa offices are located. Under the merger, A. P. Villa becomes a director of Berizzi Bros. Co., Inc., and Silvio Villa becomes an active officer and director of the firm. Berizzi Bros. Co., Inc. will continue the technical management of the plants and the policies of the Villa business as it has been heretofore conducted. A. P. Villa & Bros. name is dropped in the consolidation but all contracts taken by them prior to Oct. 1 will be delivered as usual.

PHILADELPHIA, PA. Machinery and equipment of B. Hooley & Son., Inc., 439 N. Broad St., commission throwsters, tussah, tram and fringes, has been sold to a number of machinery dealers and the firm is going out of business. They had approximately 3,000 spindles.

DYE, BLEACH AND FINISH

New Construction and Additions

*SAN FRANCISCO, CAL. The Maypole Dye Works which started operations in leased quarters at 2099 Bryant St., last spring, has an equipment of five yarn dyeing and two piece dyeing machines. The company is capitalized at $60,000. Roy T. Bishop is president and L. H. Alexander, treasurer.

*FISKDALE, MASS. The Goldin Bros., of New York, new owners of the former No. 1 mill of the Fiskdale Finishing Co., are said to be planning to expend approximately $100,000 in new equipment and preparing the plant for operation. Four printing machines are to be immediately installed and also four large bleaching kiers. A dyehouse is to be added later but for the present operations will be confined to bleaching and printing.

PATERSON, N. J. The Gatti Silk Dyeing & Finishing Co. has asked bids for the construction of a two-story dye house addition, 26 x 71 ft. Joseph De Rose, Paterson, is architect.

PHILADELPHIA, PA. Frankford Dyeing Co., 4330 Factory St., dyers and bleachers of art silk, indanthrene colors being their specialty, are increasing their facilities and adding new equipment for handling spun rayon yarn, several new vats having been installed. Drying and finishing departments on the second floor have also been enlarged, increasing their capacity considerably. According to officials of the company about half of the plant will be operated for handling of spun rayon yarn. The company is headed by Emil Pelucchi. E. F. Rankin is assistant manager.

*Indicates previous mention of project.

Fact and Gossip

*WORCESTER, MASS. At the first meeting of the creditors of the Peter Wood Dyeing Co., held before the referee in bankruptcy on Sept. 30, Edward F. Simpson, an attorney and receiver for the company was appointed trustee under $2,000 bonds. The adjourned mortgagees' sale of the company's property was further postponed on Sept. 28 until Oct. 15.

*PATERSON, N. J. Charles V. Duffy, receiver for the Luxor Piece Dyeing & Finishing Co., has issued a notice for all claims against the company to be filed on or before Nov. 1.

JOHNSTOWN, N. Y. The Bertram Goldberg, Inc., dyers and finishers of silk fabrics, is running at capacity with an enlarged working force.

MISCELLANEOUS

New Construction and Additions

BATON ROUGE, LA. The Capital Bedding Co., P. O. Box 16, Baton Rouge, is planning the purchase of equipment for installation at its plant.

SALEM, ORE. The Oregon Linen Mills are nearing completion. Contracts for plumbing and heating have been awarded to the J. F. Shea Co., Portland, at a combined figure of $21,235.

Fact and Gossip

LOS ANGELES, CAL. The American Mattress & Mfg. Co., has been organized with a capital of $25,000, to operate a local plant. The company is headed by James P. Dickens and George S. Reed, both of Los Angeles.

LAKE CITY, FLA. T. W. Karstedt, of Lake City, is considering the establishment of a mill for the production of silk and linen fishing lines.

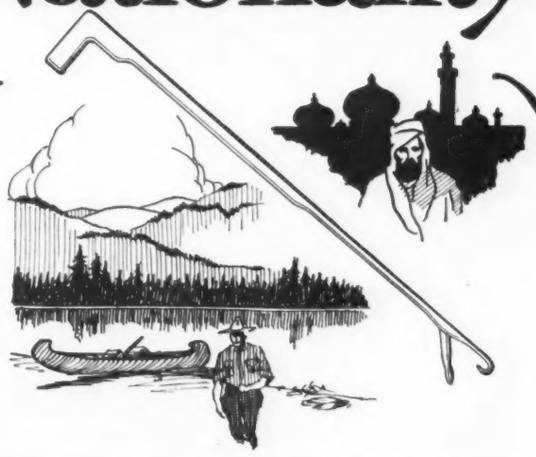
COHOES, N. Y. Textile manufacturers are cooperating with the city in the continuance of the Vocational School which was established recently. Courses are given in weaving and spinning, adapting the pupils for positions in textile mills.

HENDERSON, N. C. R. E. Scott, Mutual Bldg., Richmond, Va., and associates have engaged C. C. Chambers, Clarksville, N. C., engineer, to prepare plans for a proposed hydroelectric power plant on the Roanoke River, vicinity of Henderson, to be used for textile mill operation and other industrial service. Options on site have been secured.

PHILADELPHIA, PA. An involuntary petition in bankruptcy has been filed against B. Kerman, manufacturer of mattress felt, and the Franklin Square Bedding Co., 801 N. Second St., affiliated organizations.

*CENTRAL FALLS, R. I. The plant recently purchased by the Priscilla Braid Co. is located at Central Falls and not Phillipsdale, as recently reported in error. It was formerly used as a branch plant of the Glenlyon Yarn Dye Works, Phillipsdale, R. I.

Nationality



TORRINGTON Needles know no nationality. From New England's rocky mountains to India's coral strand these bits of steel precision are doing wonderfully fine knitting.

If you haven't already tried them there's no better time than *now*.

The red box with the green label

The TORRINGTON COMPANY
Torrington, Conn., U. S. A.

BRANCHES:

THE TORRINGTON COMPANY, CHERRY AND JUNIPER STS., PHILADELPHIA
C. D. BARNES & CO., LTD., 140-144 W. 22ND STREET, NEW YORK
LOS FABRICANTES UNIDOS, 964 CALLE BELGRANO, BUENOS AIRES

FACTORIES AT:

TORRINGTON, CONN.
MANCHESTER, N. Y.
COVENTRY, ENGLAND
UPPER BEDFORD, CANADA
AACHEN, GERMANY

EXCELSIOR TORRINGTON

See Also CONSOLIDATED TEXTILE CATALOG

Chiffons

again in popular demand

New Model K

$3\frac{1}{2}$"—300 Needle—70 gauge

Heel reduced in size

HIGH spliced heel and double sole reduced in proportion, making a narrow stocking over the instep and foot. The machine embodies all the regular features of the Model K including fashion seam and fashion marks.

Established 1865

SCOTT & WILLIAMS

Incorporated

366 Broadway — See also CONSOLIDATED TEXTILE CATALOG — **New York**

KNIT GOODS

Hosiery Demand Slackens

Temporary Slump Due to Warm Weather, but Agents Hopeful

The warm weather of the last few days has had its effect on the demand for prompt delivery merchandise. There is no doubt that the movement for prompt and nearby delivery in seamless as well as full fashioned goods has been the distinguishing feature of the hosiery market. Nor is it believed that this week's slump in demand is anything but temporary and merely the result of the unseasonable climatic conditions. With another few days of fall weather this interrupted demand is expected to spring up again with redoubled force.

No Influence on Prices

So far the depression in the cotton market has not influenced the prices of hosiery. Yarn can be obtained lower than before the last report, but the majority of knitters have a fair supply on hand which nets them considerably more than present figures and at this level there is little profit accruing to the manufacturer. It is argued that to reduce prices would not increase the volume of business but would rather disturb the buyer and cause him to hesitate even more than he has been doing of late. Nevertheless shrewd judges of the situation predict there will be more or less trading, especially by those who have not received enough business to run their plants in the hope that attractive offering may enable them to keep up their production. How long such irregularity is likely to exist will depend very largely upon the continuance of irregularity in cotton. The yarn market is visibly affected by any slight change in raw material and it is likely there will be those who figure that the same influence must be visible in finished goods.

Still Trend Toward Samples

There is no doubt there is an increasing demand for staple merchandise in men's half hose. It would be interesting if it were possible to determine the percentage of consumers who wear fancies. Of course such a percentage would vary in different localities, but the opinion is here expressed that if any figures could be obtained it would be a matter of surprise to note that in metropolitan centers a surprisingly large number still cling to staple hose. Experimental tests have been made on this point. For instance, the number of persons who wear fancies in the subway has been counted, or at least the percentage in any particular car, and it has been found that the wearers of staples are decidedly in the preponderance. This may mean little and may have no bearing on the general situ-

(*Continued on page* 131)

Will 1927 Underwear Be Reduced?

Lower Prices Regarded as Futile by Agents—Present Level Below Current Cotton Basis

AMONG the matters that are agitating the underwear selling trade is the question whether there will be reductions in prices on spring underwear. A further question is concerned with the advisability of any downward change. It is the general consensus of opinion among underwear selling agents that a move to reduce prices would be futile and unproductive of increased business.

Why Confer on Prices?

There is a movement on foot to hold a meeting of balbriggan and ribbed goods manufacturers for the purpose of conferring about prices in view of the unsettled raw material situation. Whether this meeting is held or not there are those who feel that any agitation of the subject is unwise for it may give the impression that quotations may be dropped with benefit to the market. As a prominent seller said this week in discussing the matter: "Goods are being sold today for spring on a basis of 12c cotton but it seems as though some manufacturers in spite of the fact that there can be no profit at present figures are anxious to sell on a basis of 10c cotton. If such a program continues much longer I cannot understand how a good many manufacturers are going to stay in business."

Reductions Won't Help

There is an angle to the matter of price which perhaps is not thoroughly comprehended by everybody. This was succinctly stated by a selling agent a few days ago. He said: "What is the use of reducing prices unless the reduction is big enough to put the garment in another retail price class. Our goods retail at 75c a garment. If we had the cotton given to us, the other expenses of materials, labor, overhead, interest, taxes, etc. would be enough to make it impossible to bring out a garment that would sell at 50c. There might be a few retailers who if the reduction was big enough would reduce the price from 75c to 69c but these retailers would be in the minority for the great majority would continue to sell at 75c. Neither the jobber nor the retailer wants to see a reduction. On goods selling at $6 to the retailer the jobber is making today about 33⅓%. If we reduced our prices some jobbers would possibly start to sell at $5 and they would compel others to follow suit. The result would be that the percentage of profit that the jobber would make would be practically cut in half. Our line for spring is lower than it was last year, but frankly I do not believe the reduction in price alone has caused or will cause the sale of a dozen more garments. Too much dependence on the cotton market is exhibited both by manufacturers and their selling agents whereas the price of cotton has comparatively little to do with it."

On this subject of the relation of cotton to the price of knitted underwear another equally important factor in the selling market spoke very strongly on the question of price reduction. He said: "A four pound balbriggan at $2.75 is practically on a basis of 12c cotton. And yet you hear talk of this price being cut for spring. I don't see how they figure it unless manufacturers believe they will lose less by running than by closing down. If a manufacturer loses $200 a day by operating he may figure that it is more desirable to stand this loss than to suffer the loss of $500 by shutting down, especially when in the latter case he may have to do some explaining to the banks. There are not many knitters who own their yarn as low as 29c for 22s. As a matter of fact, the average cost to balbriggan makers is above 30c. To hear some of the predictions made one might figure that yarn is owned on a basis of 25c."

Spring Business Lagging

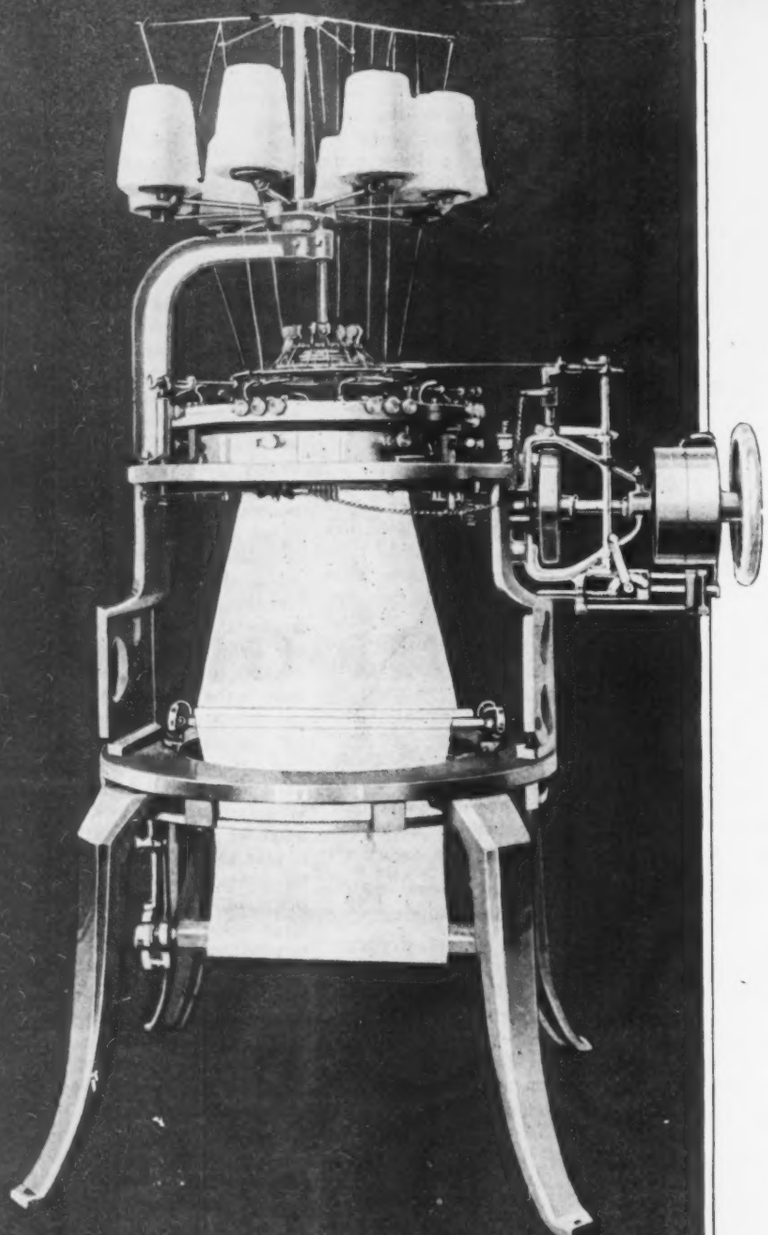
There is no doubt business in underwear for next spring is dragging, especially since the last Government report and the consequent slump in cotton. Agents do not see much chance of an improvement for the rest of the year unless there should be a radical change in the status of raw material. Buyers are likely to continue their dilatory tactics with the idea that they may secure goods cheaper and if not they would not be risking very much as they do not expect an advance. It is possible that those who take inventory in November may place some fair business the last month of the year but with the majority inventorying in December it is not expected free buying will occur before January at least. The principal feature of the underwear market for the last two or three weeks has been the consistent demand for prompt delivery merchandise. Buyers have asked that shipments be made more quickly than the terms of the contract call for and cannot understand why it is impossible to receive the goods they want immediately. This is especially true through the West where cool weather has been the rule. The last few days have seen a decided change and demand has fallen off materially. This, however, is expected to be only temporary and it is believed business will continue steady for fall merchandise throughout the rest of this month and during November.

Selling the Retailer

The much mooted question of the desirability of going direct to the retailer is receiving more consideration than ever if such a thing is possible. Perhaps this has come more to the fore since the announcement that Claflin's is to be liquidated. The passage of this old jobbing concern is thought by many to foreshadow similar announcements in connection with other wholesale distributors, and they are regarded as having only themselves to blame. There are two sides to this question and as has been said in this column before, selling agents realize they need the jobber as much if not more than he needs them. The complaint is very general that the jobber does not anticipate to the extent that makes it possible for the mill to operate with any certainty. Often the retailer is more willing to give advance information and actual orders than is the jobber. A story as to the unwisdom of changing over to the retailer may be apropos.

A selling agent relates an instance of a large retail house whose credit is unimpeachable making the guarantee of $100,000 worth of business a year to this particular house. All he wanted was the ordinary jobbing price and not any special discount for large orders. The selling agent agreed to take the matter under consideration and told the buyer if he would come back the next day he would give his decision. After talking the matter over with his partners he came to the conclusion it would not be wise to change his policy of selling to jobbers exclusively. When the buyer came in the next day, accompanied by the president of the concern, who backed up the buyer's guarantee of $100,000 a year business, he was told of the decision. In an attempt to talk the seller out of the position he had taken the retailer told him he could buy goods of various competitors and offered to demonstrate that this was the case. Taking him at his word, one of the partners in the selling house went to the buyer's office and was there shown samples of the same line of goods from all the houses in the market carrying such goods, with the exception of two. This fact, however, did not dissuade the selling agent and future events proved the wisdom of his decision.

A short time afterward the head of a large jobbing house came into the selling office above mentioned and the story was told him of the offer that had been made by the retailer, of



The solutions of many knitting manufacturing problems are found in Wildman Machinery

WILDMAN
THE WORLD'S STANDARD

WILDMAN MANUFACTURING COMPANY
Norristown, Pa.

We have issued a new edition of the complete and informative book, "The Science of Knitting." Price $2.00.

WILDMAN
SPRING NEEDLE BODY MACHINE

Knit Goods—Continued

course not disclosing the name of the concern. He was asked what he would have done under the circumstances and he replied that he would have been very strongly tempted to have accepted the retailer's offer as $100,000 orders do not grow on every bush. A day or two afterwards an order was received by the selling house from this jobber for 55 cases, with instructions to ship to the retailer who had offered to buy direct. Upon the next visit of the jobber the selling agent complimented him on the business he had received and was told that this retail house was one of the most satisfactory customers on the jobber's book. If the selling agent had accepted the proposition of the retailer he undoubtedly would have lost the friendship and the business of the jobber, which amounts to well over a million dollars a year with this one house. And yet it was clearly proven that the great majority of the trade were selling to this retailer, although at the same time professing to do business with the jobber.

Ipswich Adds Machinery

To meet the steadily increasing demand for Ipswich full fashioned hosiery Ipswich Mills have ordered and expect delivery very shortly of additional machinery of the latest imported type. This machinery will very substantially increase the Ipswich full fashioned output. The three plants of the company at Ipswich, Gloucester and Lowell are running close to maximum capacity and are comfortably sold ahead. Almost complete absence of time delivery orders and an unprecedented demand for immediate delivery of goods characterizes the fall business. The company's new dollar stocking called "Witch Maid," knit with improved machinery attachments making for better fit around the ankle is a distinct success.

Market in Czechoslovakia for American Silk Hose

A noticeable increase in the sales of American silk hosiery in Czechoslovakia has been evident during the last six months, according to advices received in the Commerce Department from Commercial Attache James F. Hodgson, Prague. While German, French and Swiss goods continue to predominate, dealers handling the American product report that they are meeting with considerable success in introducing women's hosiery in the local shops. The greatest difficulty in the introduction of American hose has been the lack of desire on the part of importers to carry stocks. Cancellation of jobbers' and retailers' orders have frequently followed the long delay before delivery is made. This difficulty is gradually being overcome as the importers gain confidence in the saleability of the goods. The current demand is for full length silk stockings rather than for those with lisle tops.

Sweater Opening Approved

Probable Conference to Consider Restriction of Styles

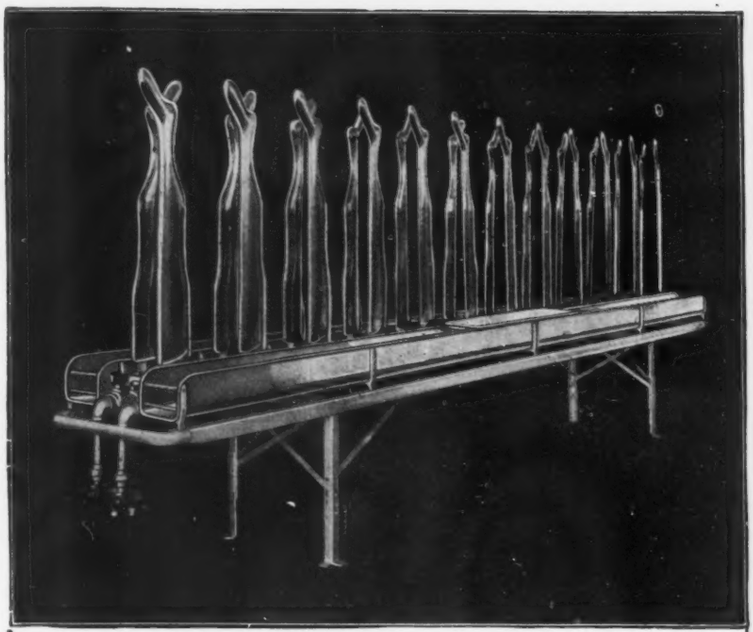
The decision to open sweaters in Chicago on November 29 is generally regarded in the selling trade as a favorable proposition. It is true that not all of the sellers will strictly observe this formal opening date. There maye be some showing before this by those whose lines are ready and who regard it as desirable to send their salesmen out early in November but even where this is done in instances these same houses will undoubtedly participate in the opening at Chicago. It is not generally believed the date announced is too late, especially if the market continues uncertain on raw material and yarns. Buyers will not be ready to consider another season much before the last of November and attempts to force them it is believed will be fruitless.

As to the matter of price, it is generally conceded that on cotton merchandise there will be a reduction. Just how much this will be few are willing to predict but a figure has been stated by certain selling agents that they believe is likely to be indicative of the change for another season. This reduction, as predicted, will amount to 5c a pound. On a 16 pound sweater, selling last year at $8.62½, it is possible that the price this year may be $7.62½. Those figures are nothing more or less than guesswork but preparations will soon be made to price lines and quotations for another year.

Styles in Demand

From those who have been on the road making a survey of the situation in reference to current demand, it is learned that a fairly general call for sweaters of a good many types is being made and that the jobber is selling a wide range of styles. A good many buyers are asking for goods which they cannot obtain and selling agents are so well conditioned that they have practically withdrawn a number of lines from the market. On men's goods a few types seem to stand out preeminently. Among these may be mentioned men's crickets, knitted lumber-jacks, and staple buttoned coats. Shakers are also moving from jobbers' stocks in satisfactory manner, while ribbed sport coats with "V" necks are also favored by the retail trade. Also it is said that the flat cloth sweater is coming back, though there appears to be some doubt in certain quarters about this. The rope sweater is moving more satisfactorily in the South but does not seem to have equal call in the North.

On women's goods considerable talk is heard among the distributing trade of the increased demand for button coats with the Byron or student collar. Also the pullover with student neck is considered a leader with many. There are those who are insistent that the tuxedo is going to be a leading factor, a few buyers claiming they are behindhand on the de-



Paramount Progress

The increasing number of Paramount Users establishes more firmly than ever before, the Superiority and Efficiency of the PARAMOUNT METHOD for correct hosiery drying and finishing. One of the important factors in determining Paramount Supremacy is the constant improvement of Paramount Equipment to more effectively fill the requirements of discriminating hosiery manufacturers.

We are now in a position to furnish on either a sale or rental basis, the NEW PARAMOUNT ALL-METAL TABLE with ANGLE-BASE ATTACHMENTS, plus an improved and different principle in Low Pressure Steam operation.

This NEW TABLE is made entirely of metal and the troughs are constructed from smooth, highly-polished aluminum. Aluminum is non-absorbent and tarnish-proof, which permits changing from colored to bleached goods by simply wiping out the troughs. All edges are rounded and there are no corners or pockets to collect dirt. The possibility of THREAD PULLING is positively eliminated.

The ANGLE-BASE ATTACHMENT allows the operative to see both sides of the stocking without moving the form. It facilitates and simplifies both boarding and stripping and promotes Quality Work.

The new Circulating System provides for uniform heating at all times, with unusually low steam pressure.

Upon request, we will be pleased to furnish further particulars.

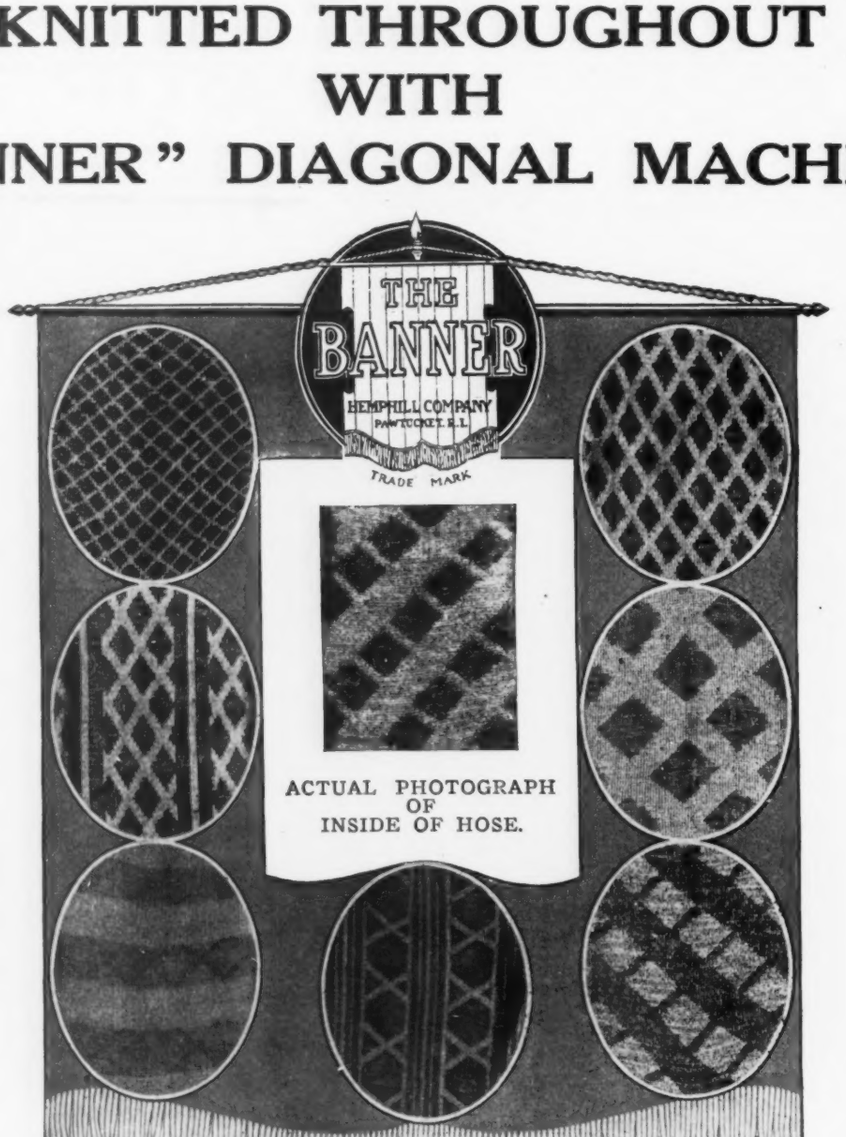
PARAMOUNT TEXTILE MACHINERY CO.

See also CONSOLIDATED TEXTILE CATALOG

Hunter Building

Market and Madison Streets, Chicago, Ill.

NEW AND NOVEL DESIGNS KNITTED THROUGHOUT WITH "BANNER" DIAGONAL MACHINES



THESE patterns are not printed on the outside; they are actually knit into the fabric by our patented reversed plaiting method, as shown by the illustration.

Patterns like the above and many others are easily made by our "Banner" Diagonal Stripe machine equipped with Horizontal and Vertical attachments.

See also CONSOLIDATED TEXTILE CATALOG

HEMPHILL COMPANY

MAIN OFFICE AND FACTORY

PAWTUCKET RHODE ISLAND

New York Sales and Show Rooms
93 Worth Street, New York

Southern Office
James Bldg., Chattanooga, Tenn.

Philadelphia Sales and Show Rooms
Colonial Trust Bldg., 13th and Market Sts.

Knit Goods—Continued

leading factor, a few buyers claiming they are behindhand on the delivery of these goods and cannot get their demands satisfied.

May Agree on Styles

The matter of concentrating on a few styles is evidently being taken up in a serious way by the trade. It is reported that a conference will be held in the very near future by representatives not only of New York City selling agents but participated in also by representatives from other centers. The idea of limiting the number of styles, and of all houses showing the agreed-upon types, which was first mentioned in these columns, seems to have met with universal favor, with the result that representatives of leading houses have agreed to come together to discuss the matter. Whatever may be accomplished, or even if nothing is actually done, the principle, it is believed, is a correct one and would make for increased profit to manufacturers as well as render a service to the buyer.

Northampton Names Agents

The Northampton (Mass.) Hosiery Co., manufacturing full fashioned hosiery, has appointed Lee & Cowan, 389 Fifth Ave., New York as sole selling agents.

Hosiery Demand Slackens

(*Continued from page 127*)

ation but it tends to confirm the reports of certain selling agents that the trade are beginning to tire of fancies to a degree. Of course the prediction has been made ever since the fancy came into general vogue that it will not last and it probably will last a good deal longer than anyone anticipates. There is coming a day, however, according to the belief of many, when for no explainable reason the average consumer will come to the conclusion that he is through with fancies and then it does not matter how many new lines or how many attractive patterns are shown, if it is the fashion to wear plain stockings, fancies will go out.

Are New Patterns So Necessary?

The constant demand for something new in fancies and the catering of the manufacturer and the selling agent to this demand is believed in certain quarters to be an unnecessary waste. There is no doubt that the buyer with his intimate knowledge of what is new and what is not becomes tired of old styles and demands something fresh. But is this a reflection of the consumer's attitude or is the latter just as well satisfied with styles of fancies that were shown last year or last month or six months ago as he is with something that is the newest thing on the market? Of course, the new thing affords the talking point to the retailer, but it is a question in many minds whether the consumer would know the difference between the old and the new and whether he would not buy just as many pairs of fancy stockings on half the number of styles that are shown.

Sweaters to be Shown

Official Opening Date Set as November 29 in Chicago

The National Knitted Outerwear Association announces that November 29 has been selected, by a preliminary canvass of the trade, as the official fall opening date. The entire trade, including both members of the association and non-members, is being circularized for the purpose of urging the acceptance of that date generally.

In the past certain mills and selling agencies have been in the habit of conducting a general opening at the Great Northern Hotel in Chicago. There has been some sentiment against this opening and a growing feeling that the date should be set forward to about December 1.

There is no doubt that a later opening and the general observance of a definite date will do much to stablize conditions and encourage intelligent buying.

The National Knitted Outerwear Association is sending out blanks to be returned, on which the mills and distributors are requested to express their willingness to observe the official opening date.

Underwear Comment

An illustration of the manner in which certain jobber's order was given by a leading selling agent this week. He said this particular order consisted of a total of two dozen in assorted sizes. The order was sent back with a polite letter stating that evidently it was a mistake and should have been placed with a jobber. The reply came back by telegram collect that it was no mistake and that it was expected the order would be filled promptly. Another collect telegram was sent by the selling house that the matter was referred to the mill and shipment would be made as soon as possible. Assurance was given by the head of the selling house that the order would never be filled as the mill involved had been running day and night in these goods since the first of January and it is not likely they would pay any attention to this retail order.

* * *

That something more than style consciousness is needed to introduce new things in knitted fabrics is declared to be the case of selling agents. Samples of knitted pajamas were brought out by a prominent concern a few years ago. They were shown to prominent retailers who declared their belief in their practical value, but who stated that until enough publicity had been given the garment to induce the consumer to come into the store and call for them they could not give them away. * * *

A meeting of balbriggan and ribbed underwear manufacturers is being proposed for the near future, probably in New York, at which discussion of the current situation with respect to prices will be the principal feature.

Who's Responsible?

WHEN your product fails to measure up to the standard your market demands, or when your seconds and imperfects run away with profits—who do you blame?

The surest way of securing uniformly high quality production—to absolutely control the grades of your output—is to install knitting machinery that has back of it an unquestioned reputation of quality performance covering many long years of service to manufacturers.

We will gladly send you full information of our complete line.

H. BRINTON COMPANY
3700 Kensington Avenue Philadelphia

CIRCULAR BRINTON KNITTING MACHINES

FOREIGN AGENTS

Great Britain and the Continent: Wildt & Co., Ltd., Leicester, Eng.

South America: Santiago Scotto, Moreno, 1756. Casilla Correo 662, Buenos Aires, Argentine Republic.

Australia: J. H. Butter & Co., Sidney, Melbourne.

China and Japan: Elbrook, Inc., 51 Kiangse Road, Shanghai, China

Special Rayon Service for WOOLEN and WORSTED GOODS

Manufacturers and Designers

We have ready for distribution upon request sample cards of various yarns particularly adapted for use in decorating woolen and worsted goods.

Set No. 1

Two Ply Rayon Yarns Fast to Fulling, Crabbing, Cross Dyeing, and Bleaching.
(*Not Resist to Speck Dyes.*)

Set No. 2

1. Attractive Rayon Two Color Twists Fast to Fulling, Crabbing, Cross Dyeing, and Bleaching.
2. Rayon and Cotton Fancy Twists Fast to Fulling and Cross Dyeing.
(*Not Resist to Speck Dyes.*)

Set No. 3

1. Celanese Two Color Twists RESIST to Speck and Union Dyeing. Stand Piece Carbonizing.
2. Celanese and Spun Silk Fancy Twists RESIST to Speck, ACID, and Chrome Dyeing. Stand Piece Carbonizing.

Set No. 4

1. Celanese and Cotton Fancy Twists RESIST to Speck and Union Dyeing.
2. Two Ply Celanese Yarns RESIST to Speck and Union Dyeing. Stand Piece Carbonizing.
3. Celanese and Worsted Fancy Twists RESIST to Speck Dyeing.

In sending for sample cards indicate the set or sets in which you are particularly interested.

SPECIAL YARNS CORPORATION

South Boston, Massachusetts

FABRICS

Wool Goods

American Woolen Co. Prices Women's Wear

Variety of Pattern and Color in Spring Fancies from 97½c to $3 —Fall Fabrics Reinstated

The showing of women's wear fancies in Dept. 4 of the American Woolen Co. for spring, 1927, discloses the most varied and brilliant line ever put out by this department. Many novel weaves of heavy yarn construction approximate hand loom effects. A full color range in many combinations is used. Plaid motifs are developed along new lines.

In addition to the spring fancies a number of fall lines are reinstated for deliveries through January for the early spring trade. Changes since the fall opening show both advances and declines. Venise, the pile sheen coating which has been jobbing at $5.25 net, is priced at $4.62½ regular against an opening price of $4.40.

The new spring fancies in Dept. 4 range in price from 97½c to $3.00. The goods in the department are the product of 20 mills as follows: Wood Worsted Mills, Washington, National and Providence, Ayer, Arden, Norwich, Assabet, Sawyer, Bay State, Anderson, Yantic, Burlington, Forest, Chase, Rochdale, Brown, Hartland, Wevbosset Baltic and Mascoma.

Styles and prices follow:

	National and Providence		
B	14020	16½/17 oz.	$3.00
	14021	14½/15 "	2.50
	14023	16 "	2.50
	14024	16 "	2.75
	Norwich		
GG	20017	12 oz.	$1.25 to $1.30
	20018	15 "	1.47½
	20019	13½/14 "	2.20
	20020	12½/13 "	1.12½ to 1.15
	Sawyer		
J	22306	14½/15 oz.	$1.57½ to $1.65
	22307	16/16½ "	1.72½ to 1.82½
	22308	20/21 "	2.20 to 2.25
	Bay State		
K	15305	14½/15 oz.	$2.32½ to $2.42½
	15306	13½/14 "	2.00
	15307	14½/15 "	2.07½ to 2.12½
	15308	12½/13 "	1.75
	15309	16½/17 "	2.20
	Anderson		
O	20626	13/13½ oz.	$1.35 to $1.40
	20627	13 "	1.50 to 1.52½
	20629	10 "	1.47½ to 1.50
	20630	12½/13 "	1.12½ to 1.20
	Yantic		
RR	17032	14/14½ oz.	$1.57½ to $1.62½
	Forest		
SS	20204	12½/13 oz.	$0.97½ to 1.10
	Burlington		
S	11181	12 oz.	$1.47½ to $1.65
	11183	11 "	1.40 to 1.45
	11185	14/14½ "	1.75 to 1.82½
	Hartland		
UU	19850	14½/15 oz.	$2.30 to $2.32½
	19851	11/11½ "	2.00
	19852	11½/12 "	1.32½/1.40
	19853	15/15½ "	2.60
	19855	13/13½ "	1.40/1.45
	19856	14/14½ "	1.72½
	Wetbosset		
W	20303	16/17 oz.	$2.05 to $2.22½
	Baltic		
X	16174	13½/14 oz.	$1.20
	Mascoma		
ZZ	20401	12/12½ oz.	$1.27½ to $1.42½
	20402	16 "	1.45 to 1.47½
	20403	16 "	1.50

Repeats and staples follow:

	Cotton Warp Pile Sheens			
	Baltic		New price	Fall 1926 opng.
X	16172 DK	18/19 oz.	$1.80	(1.70)
	" LT	" "	$1.85/$1.87½	(1.72½/1.82½)
	16175	21 "	2.25	
	16176	19 "	2.12½	
	All Wool Pile Sheens			
	Washington			
	Vel-sheen	19 oz.	$4.20	(4.20)
	Venise	17/18 "	4.62½	(4.40)
	Bay State			
K	15296	16/17 "	3.15	(3.25)
	Rochester			
	Ormadale	16/17 "	5.00	(5.07½)
	Velverette DK	17/18 "	5.35	(5.35)
	" LT	16/17 "	5.62½	(5.55)
TT	21616 DK	17/18 "	3.57½	(3.50)
	" LT	16/17 "	3.65	(3.50)
	21644 DK	17/18 "	5.12½	
	" LT	16/17 "	5.37½	
	21648 DK	16/17 "	3.30	
	" LT	15/16 "	3.37½	
	Brown			
U	18495	18/19 oz.	$3.87½	
	18499	19 "	3.67½	
	18500	19 "	3.62½	
	Suedes and Velours			
	Assabet			
I	13776 DK	18 oz.	$1.90 (1.85)	Antelope-Suede
	" LT	18 "	2.00 (1.95)	A
	Baltic			
X	16052 DK	20 oz.	1.32½ (1.37½)	
	" LT	20 "	1.40 (1.47½)	
	Chase			
T	1018-2	20 oz.	1.40 (1.47½)	
	Light Weight Velours			
	Assabet			
I	1303	9 oz.	$1.50	
	1309	11 "	1.80	
	1313	11 "	2.30	Kid-skin suede
	1314	9 "	1.52½	
	Fancy Worsteds			
	Wood			
AA	09372	10 oz.	$2.40	Bayadere worsted
	90166	11 "	2.20	Balma tweed (8 colors)
	90169	9½ "	2.12½	Worsted check (8 colors)
	Ayer			
BB	06244	8½ "	2.42½	Crepe
	Arden			
E	300	9½/10 "	2.42½	Pencil stripe
	309	13 "	3.75	Cordelier
	313	11 "	2.87½	Rayondecorationworsted
	Fancy Weave Cheviots			
	Washington			
A	01364	9 oz.	$1.42½	
	01369	12 "	1.65/$1.72½	
	01370	12 "	1.65/$1.72½	
	Cheviots			
	Wood			
AA	09581	13 oz.	$1.57½	
	09582	13 "	1.67½	
	09583	13 "	1.77½	
	09584	13 "	1.77½	

* * *

Stock Goods Clean Up in Men's and Women's Wear

Interest in spot goods in the women's wear field has been such as to clean up supplies of desirable fabrics in many quarters. In the secondary market the most wanted types of goods command a premium. And all this despite the fact that the garment strike is nominally still in effect in New York. Mills which had accumulated goods during the dull period of the summer, have been able to turn these stocks into money, in a number of instances very advantageously. The general clean up of spot goods in most staple lines such as bolivias, and poirets and sheen twills paves the way for great improvement in the selling of merchandise for forward delivery.

Call for stock goods has equally been a feature of the men's wear trade and seasonable fabrics have been taken with less restraint than clothiers have shown for some time.

Cotton Goods

Cotton Goods Decline Is Orderly and Slow

Adjustment to New Cotton Basis Will Give Mills Better Margin for Profit

The unusual thing about the cotton goods market at the present time is its serenity in the face of a 5c drop in cotton. Relatively firm conditions exist though gray goods have lost ¼ to ¾c per yard. There was nothing panicky about the decline and only this week has there been any noteworthy pressure on the part of second hands to unload goods.

Granting that the current stability is merited mill margins are greatly improved. It will of course take time for mills to acquire raw material supplies at the new low levels and most of them at best can only average this cotton in with what has already been contracted for. The manufacturer who was short on cotton at the close of September appears to be in a strong competitive position if he does not overstay his market.

The spot situation remained the strongest phase of the gray goods market and nominal asking prices of some mills had dropped not more than ¼c since mid-September. Such mills are of course undersold by their more anxious competitors but there has been little evidence of any pressure in pushing spot goods. In contracts some low figures are heard. For example the nominal asking price of some eastern mills on wide 64 x 60s was 7¾c at mid-week while southern contracts were to be had at 6⅞c. Sateens and twills are strong and have declined less than the plain weaves.

Commission men report that a certain amount of finished goods business has continued through the last two weeks, though not for the more distant deliveries. Buyers who have need for merchandise are quite willing to acquire it and well known brands particularly show no indication of concessions. Unbranded goods are showing themselves a little more flexible under the changed situation.

* * *

New Rayon-Cotton Draperies Shown by Amory, Browne

Amory, Browne & Co., New York, are featuring a brocaded rayon toile-de-jouy in their spring drapery lines. This fabric carries as central motif a reproduction of historic Mt. Vernon, and is 48-50 inches wide and various color combinations.

The company is also offering Gilbrae rayon-cotton damask in 50-inches in a wide variety of colors. The Lancaster slip-cover materials in 36-inches feature striped effects in which gold and orange and black are prominent.

Wauregon waterproof glazed chintz is another featured fabric. "Chinza", a sister fabric, comes both plain and glazed and is double faced so that the same effect is found on both sides.

* * *

Cotton Goods Quotations

	Oct. 6	Sept. 29	Oct. 7, 1925
Spot cotton, N. Y.	13.65¢	15.20¢	23.10¢
Print Cloths			
27-in., 64x60, 7.60	4⅞-5½¢	5-5½¢	6⅞¢
38½-in., 64x60, 5.35	6⅞-7½¢	7-7½¢	9½-10¢
39-in., 68x72, 4.75	7⅞-8¢	8-8¼¢	10¾-11¢
39-in., 72x76, 4.25	9-9¼¢	9¼-9⅜¢	12½¢
39-in., 80x80, 4.00	9¾-10¢	10-10¼¢	13¢
Brown Sheetings			
36-in., 56x60, 4.00	8¾-9¢	8¾-9¼¢	11½¢
36-in., 48x48, 3.00	10½-10¾¢	10¾¢	12⅝-12¾¢
37-in., 48x48, 4.00	8¼-8⅝¢	8⅛-8½¢	10¼-10½¢
Pajama Checks			
36½-in., 72x80, 4.70	8½-8⅝¢	8½-8¾¢	11⅛-11¼¢
36½-in., 64x60, 5.75	7-7¼¢	7-7⅛¢	9⅛-9¼¢
Miscellaneous			
Drills, 37-in., 3 yd	11¢	11¢	13¢
Denims, 2.2 lb	15½¢	15½¢	19¢
Tickings, 8 oz	18½-2.¢	18½-2.¢	23¾¢
Standard prints	8¢	8¢	9½¢
Eastern staple ginghams, 27-in	9¢	9¢	11½¢

Silk Goods

Finished Silk Prices Gain Through Market

Manufacturers Still Complain but Admit They Are Higher— Georgettes Good

Though silk manufacturers still complain about the prices that they can obtain for their goods, accurate reports would indicate that there has been considerable improvement particularly in the last week. The strong trend to the raw silk market has encouraged many of the weaker kneed ones who seem to enjoy doing business for the turnover, to ask higher prices for their goods. Improvement in some particular cases has run as high as 5c a yard according to reports.

Three thread georgette continues to be good. Many houses complain of the competition of jobbers who have bought gray goods on a cheaper basis and are willing to sell the 80 square number finished at $1.35. By accepting a small profit and by using a smaller shrinkage, certain houses can sell on this basis but there is nothing in it for the majority. Satin crepes are good as are flat crepes also.

Silk Situation at a Glance

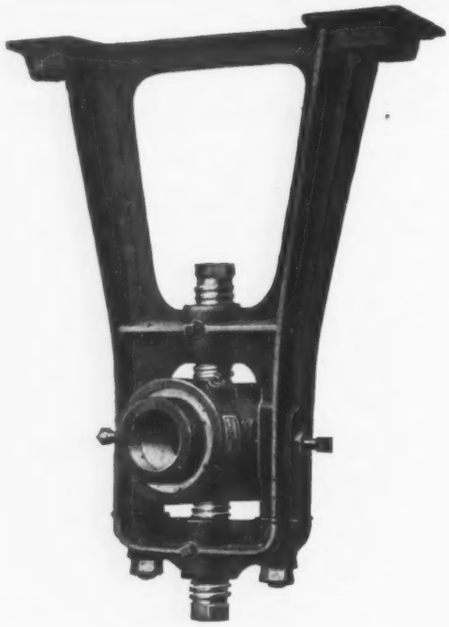
PRODUCTION: Unchanged.

DEMAND: Active for weighted goods and georgettes.

STOCKS: Moderate.

RAW SILK: Prices slightly higher; stocks unchanged.

SENTIMENT: Confident.



Like Finding New Power

Between the power producing plant and the operating machine often will be found great losses of power. That costs money.

The problem of securing proper Power Transmission for continued, economical performance finds a happy solution in the selection of Wood's Power Transmission Appliances. That saves money.

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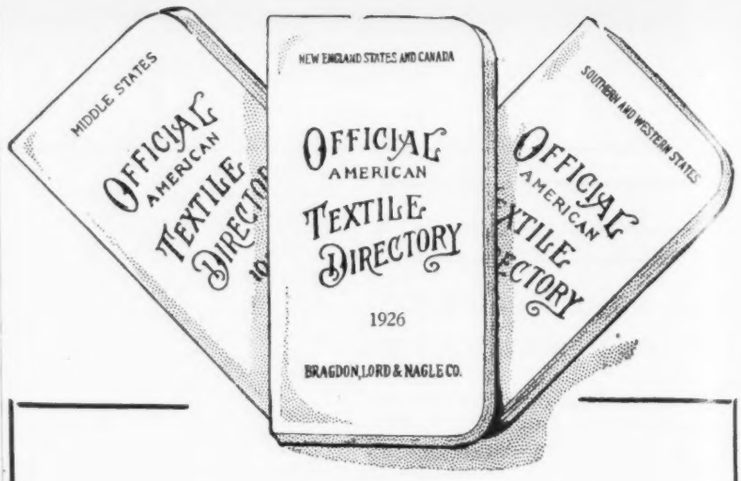

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Arranged geographically by states and towns. Gives all the mills under each town and the same complete information about each as found in the large Office Edition—kind of mill, product, equipment, officers, who buys, yarns bought, kind of power used. Also contains textile maps.

These directories are an invaluable aid to salesmen travelling the textile districts. Be sure that your men are equipped with the latest, 1926 Edition—All previous editions are out of date and their use results in costly waste motion and mistakes.

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FINANCIAL

Recent Advances Largely Lost

Investors Fear Business Improvement Over-Discounted—Disappointing Amoskeag Report

BOSTON, Oct. 6.—The recent advances in leading textile securities following the considerable improvement in business last summer has been largely lost; no broad investment interest in textile stocks has since developed and some of those who bought early for a speculative advance have lost faith in any permanent improvement in business and are now selling. Taking the market as a whole it can be stated that the supply of textile securities is much in excess of demand, and there is no telling what might be the size of the supply on a steadily advancing market. It is well understood that there is a considerable number of present stockholders who would be glad to exchange their holdings for some other class of securities if they could get out without too great a loss. To check this buying and to greatly broaden the demand for textile securities there must be a very marked and permanent improvement in business and prospective profits. Just such a movement as this appears to be in the making, but there are comparatively few investors who think so and little of a constructive character is being done to give the public the facts and broaden the market.

Moderate Recent Declines

Although in this week's trading declines have outnumbered advances in leading textile stocks the former have been seldom in excess of one or two points. For instance, American Woolen preferred at 79 is off only ½ point and the common at 28½ only ¾ point; Amoskeag preferred at 73½ is down ½ point and the common at 52 is off 2 points, and this despite the disappointing report made public at today's annual meeting; Pacific at 45 shows a decline of 2 points for the week and Bigelow Hartford common at 75 a decline of 1 point. A little selling of New England Southern preferred recently has carried this stock to a new low of 8, while the common has sold down to a new low of $1. At today's auctions the only marked decline was of 8½ points in American Mfg. common, while Massachusetts advanced 2¼ points to 70 and Nashua preferred 1⅛ points to 83¼.

The Amoskeag Statement

The Amoskeag Mfg. Co., for the 12 months ended June 30, showed a loss of $3,565,104 as per the report of treasurer F. C. Dumaine at today's annual meeting, while the Amoskeag Co., the holding company, for the year ended May 29 showed a net profit after payment of interest and preferred dividends of $308,798. The holding company's gross income of $1,092,248 was made up of interest from Liberty bonds and other sources, excepting $46,400 of dividends. After payment of expenses, interest and prefered dividends there was transferred to surplus account $308,798. The holding company showed total assets of $25,806,160 of which $24,369,800 are 4th 4¼% Liberty bonds at market value; after deducting $6,500,000 of notes payable there is a profit and loss reserve of $19,306,160. No value is given to the holdings of the Amoskeag Co. in the Amoskeag Mfg. Co. owing to the difficulty of placing a fair valuation on these shares under present business conditions.

The report of Treasurer F. C. Dumaine of the Amoskeag Mfg. Co. is in part as follows:

"This account shows a shrinkage in assets for the year of $3,565,104. Included in the income was $293,728 received for interest on Liberty bonds, bank balances and cash discounts.

"This shrinkage in assets may be divided approximately as follows:

Expended for new construction	$687,609
Charged off inventory	2,220,216
Loss from operations	657,278

"Nothing was charged off for depreciation. The expenditures over a period of years upon buildings and equipment, included in operating expenses, have been at least equal to the depreciation for that period.

"The past year has been one of falling prices in the cotton and cloth markets. In consequence of the adoption, rather more than a year ago, of the practice of valuing stock at cost or market it has been necessary to mark off more than $2,200,000 in order to bring the inventory down to substantially market value. You will recall that your attention was directed to this danger in the report of Oct. 28, 1925. It is not a good system of accounting, though it appears to be fashionable.

"The manufacture of rayon yarns for use in connection with the production of fancy goods is a comparatively small affair, on the whole an experiment in this field. A product of sufficient quantity and satisfactory quality for our own needs is being made which otherwise would have been purchased in the outside market. It has not seemed advisable to increase our production beyond that point.

"In the report above-mentioned your attention was called to the then existing unsettled condition in the textile world. No marked improvement has occurred. We are still suffering from an unequal demand and supply; the cotton machinery of this country, and in fact of the world, seems to be capable of producing more goods than the world requires. Consequently, partial operations are conducted at excessive costs while the same destructive taxation continues to be exacted during depression as during periods of profit. The management had hoped the community would see fit to adopt some measure of relief and thereby do their share toward maintaining the industry within its borders, but nothing along these lines has as yet been forthcoming.

"It would be possible to enlarge upon the lack of demand for cotton goods, its causes, and the sharp competition which brings the prices for cotton products to the point where there is absolutely no profit to the mills, but the situation is too commonly known to make it necessary.

"I regret to express to you the opinion that it will probably be impossible during the coming year to operate the machinery to its full capacity. Consequently no considerable profits can be expected unless conditions very materially change; it is hoped that losses may be held to the lowest possible minimum."

The manufacturing company presents the following trial balance as of June 30, 1926:

Plant account		$16,686,227
Cash		$1,704,571
$4,340,000 U. S. govt. 4¼% fourth Liberty Loan bonds at 102⅛		4,448,500
Total cash and Liberty bonds		6,153,071
Other investments:		
Notes with collateral	$111,568	
Quick assets Delta Land Co.	102,625	
Lion collars & shirts stock	14,800	
Northern Waste Co.	1,350	
Miscellaneous	514	230,857
Accounts receivable		7,192,081
Cotton: raw, wrought and in process	6,437,221	
Wool: raw, wrought and in process	4,535,353	
Manufacturing supplies	642,056	
Total inventory		11,614,630
Total quick assets		25,190,639
Prepaid taxes		71,375
Total assets		41,948,241
Deduct accounts and notes payable		1,000,116
Balance of assets—res for shareholders		40,948,125

Little Interest In Rayon Securities

Recent Experiences Have Checked Both Investment and Speculative Interest

A YEAR ago investment and speculative interest in rayon and near-rayon securities was at fever heat; today the investment and speculative temperature of the so-called general public on such securities is decidedly sub-normal. The brokers handling such stocks a year ago were numerous while today they are hard to locate. Within the year the losses suffered by investors who bought stocks of seasoned companies at or near the top of the market have been serious, and many who speculated in securities of new enterprises, or older companies that have been forced to reorganize, have been practically wiped out.

The top of the boom in rayon stocks was passed long before the announcement of a general cut in prices was made last summer, and since then both speculative and investment interest of any but so-called insiders has been temporarily eliminated. The officials and stockholders of well established companies may well view this change in attitude of the investing public with equanimity. It means that it is practically impossible to interest the general public in securities of new rayon enterprises. It means, too, that the industry will temporarily be rid of stock jobbing propositions. It may prove more effective than the recent cut in prices of rayon yarns to stabilize the industry.

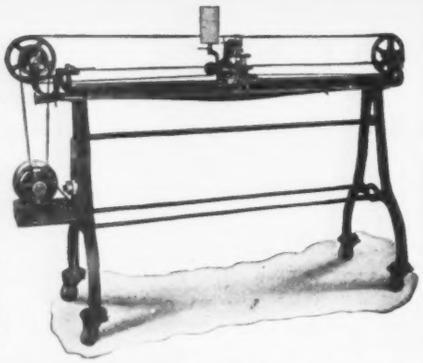
It is well understood that the recent price reduction left a very ample margin of profit for adequately financed and managed properties despite the very marked increase in the productive capacity of existing domestic and foreign mills. The business outlook for well established concerns is hardly less rosy than it was a year ago. The rayon industry is no longer an infant but synthetic fiber production is in its comparative infancy; research has been stimulated by increased competition and at any moment we may hear of new discoveries that will open opportunities for increased profits in synthetic fiber production. It is possible, of course, that some of these may be developed outside of existing rayon companies, but the chances are that new developments in this field will be initiated or controlled by large existing companies of ample financial means.

If these surmises are correct then those investors who wish to participate in the future growth of the industry are more likely to find their opportunity in the securities of existing large producers than in those of smaller concerns or new enterprises that may be developed later on. Those who are considering such investment must remember that so far as prospective profits and stock values are concerned the present is a testing period; following recent declines in rayon securities there has been no indication of a substantial reaction; and if there is to be a general decline in industrial stocks during the next few months then it is quite probable that rayon securities will be similarly affected. It is reasonably safe to predict, however, that in time existing stock values of leading rayon producers will prove to be safe and low. This prediction is based not so much upon the probability that demand for the existing lustrous rayon yarns will expand indefinitely, but upon the probability that new synthetic fibers will be developed that may prove much more closely competitive with existing natural fibers.

Mollohon Mills to Join Kendall Group

Practically all of the stockholders of the Mollohon Mfg. Co. of Newberry, S. C., have ratified the deal with the Kendall Mills, Inc. and it is practically assured that at the stockholders' meeting on Oct. 11 all the stock will have assented. The new management took charge of the operations of the mill on Sept. 6. They are planning to install 8,000 additional spindles which will

A Power Sewing Machine That Is Portable



For the finishing processes in Dye Works, Cloth Rooms, etc. can be easily shifted to any part of the mill.

Perfect Seams, Wet, Dry, Thick or Thin Goods

Sews seams absolutely straight close to the edge and easily removed.

No. 3 Electrically Driven Railway Sewing Machine on Casters

can be plugged into any lighting circuit. (No power line necessary.) Built in any length for various cloth widths. Sews cotton, woolen or silk goods.

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Makers of Piece End Sewing Machines for over 50 years

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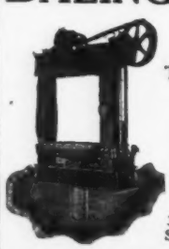

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NORTH BILLERICA, MASS.

FREDERIC S. CLARK, President

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bring the equipment up to about 50,000 spindles and 1,100 looms.

The Kendall Mills group in the South now includes the Addison Mills at Edgefield, S. C. the Wateree Mills at Camden, S. C., the Thrift Mills at Paw Creek, N. C. and the Oakland Cotton Mills at Newberry, S. C. where the Mollohon is also located. These mills aggregate about 145,000 spindles. Their finishing and converting plants are the Lewis Mfg. Co. at Walpole, Mass. and the Slatersville Finishing Co. at Slatersville, R. I.

Henry P. Kendall, the president and treasurer, is the executive head of this organization which has made remarkable progress in the last few years and built up a very large business throughout the country in hospital supplies and sanitary products through their own selling organization. The policy of the management is first to develop the markets and the selling end, then control the converting processes so that they will be absolutely assured of the quality and character of goods for the finished product and then manufacture under the most improved modern methods the larger proportion of the gray goods that they require, thus maintain direct supervision and control over the whole series of operations from the raw material to the consumer.

Another feature of this mill's policy is the coordination between the different branches. The operating heads of the southern mills and the superintendents of departments make periodical visits to the converting plants in the North and those in the northern plants occasionally visit the South. This removes sectional antagonism and produces a spirit of common interest and unity of purpose. Mr. Kendall has a home in Camden as well as in New England and there is no spirit of absentee management in this organization.

Boston Stock Auctions

The following sales of textile shares were made at Wednesday's auctions:

Shrs.	Mill	Par	Price	Change
13	Naumkeag	100	153⅛	—1⅜
2	West Point	100	136	+1
30	Hamilton Mfg.	100	60c-50c	—15c
1	Massachusetts	100	70	+2¼
3	Brookside	100	94	—2
15	Nashua, com.	100	49⅛	—1⅛
3	Plymouth Cordage	100	132	—1¼
22	Wamsutta	100	65⅞	—1⅝
5	Nashua, pfd.	100	83¼	+1⅛
12	Great Falls	100	18	—1
18	American Mfg., com.	100	99½	—8½
28	Boston Woven Hose	100	84¾	+2½

77 Total.

Dividends Declared

Mills	Pd.	Rate	Stk. Payable	To stk. of
Briggs Mfg.	Q	$0.75	Com. Oct. 25	Oct. 11
Bigelow Hartford	Q	1.50	Com. Nov. 1	Oct. 14
Bigelow Hartford	Q	1.50	Pfd. Nov. 1	Oct. 14

Silk Stocks on N.Y. Exchange

(Week ending Oct. 5)

1926 High	Low	Stocks	Sales	High	Low	Last
30⅝	27⅝	Belding-Hemingway	4,200	30⅝	28¾	30¼
17⅝	12⅝	Century Ribbon	600	16	16	16
47⅝	33¼	Julius Kayser	9,600	43⅞	40⅛	43
28½	15	H. R. Mallinson	700	17	16	17
22	12¼	Van Raalte & Co.	.....	....	....	....

Mill Taxes in Fall River Higher

FALL RIVER, MASS.—The city taxes of the local mills for the present year total $1,929,477 upon personal estate and $1,563,936 upon real estate, which is an increase of about $400,000 over the 1925 taxes upon the mills. The valuation of the personal essate of the mills was figured at $67,939,300 and that of the real estate at $55,068,200.

Southern Stocks Firm

GASTONIA, N. C., Oct. 2.—Southern cotton mill shares remained practically unchanged in price during the past week as compared with the average of the 25 stocks for the previous week. According to the weekly summary, as furnished by R. S. Dickson & Co., the average for the week stood at 110.92 as compared with 111.00 a week previous. The stocks registering gains for the week were as follows, Belton, American Spinning, Efird, Perfection and Stowe. Judson, Marlboro and Woodruff showed slight declines. The preferred issues remained steady with trading fairly active.

Fall River Stocks Slower

FALL RIVER, MASS.—The demand for local mill stocks slowed up somewhat during the week as was to be expected with two successive weeks of light trading in the cloth market resulting from the sharp drop in cotton prices. Some trading was nevertheless done and in nearly every instance at a new high price. Davis mills sold at the new high of $79.75 per share, Union Cotton at the new high of $90, Flint mills at the new high of $93, Richard Borden at the new high of $50 and Border City at $48. King Philip mills continued in demand at $131 with $135 being asked, the latter price being attained for a small block of the stock at auction. Sagamore Mfg. Co. sold from $152 to $155, the latter being the later asking price. The asking price of Merchants was advanced to $60 following a small trade at $58.

New England Textile Stocks

(Quotations at "Public Sale" are based upon last sales at Boston public auction and Boston Stock Exchange. Bid and Asked prices are latest quotations of leading Boston dealers.)

	Public Sale	Bid	Asked
Am. Wool. pfd.	79	....	....
Am. Mfg. pfd.	82	80	83
Amoskeag, com.	52	....	....
Androscoggin	51	50	53
Appleton	45¼	40	45
Arlington	75¼	75	77
Bates	133¾	130	135
Berkshire Cot.	....	134	138
Bigelow-Httfd. com.	75	....	....
Boott	....	102	107
Edwards	80	50	58
Esmond, pfd.	100	98	....
Everett	24¾	22	25
Farr Alpaca	176	175	180
Great Falls	18	18	22
Hamilton Woolen	35	33	....
Hill	20⅜	20	23
Ipswich, pfd.	79	85	90
Ipswich, com.	48½	48	54
Lawrence	67⅞	67	71
Ludlow Asso.	167⅛	171	173
Lyman	119¾	117	120
Massachusetts	70	70	73
Merrimack, com.	114	112	115
Nashua, com.	49¼	50	53
Nashua, pfd.	83¼	82	84
Naumkeag	153⅛	152	155
N. E. So. pfd.	8	....	....
Otis Co.	23¼	30	35
Pacific	45	....	....
Pepperell	129	126	128
Plymouth Cordage	132	131	135
Tremont & Suffolk	47½	42	48
York	60	40	43

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PAULSON, LINKROUM & CO.
INC.

COTTON YARNS

of every description for Weaving and Knitting

We specialize in Cotton Yarns for Export

52 Leonard St., New York
PHILADELPHIA CHICAGO
PAWTUCKET CHARLOTTE, N. C.

COTTON YARNS
Spun By
THE PARKDALE MILLS, INC.

The Test of a Good Yarn

The exceptionally high lustrous quality of the fine cotton yarns spun at this mill, in sizes up to 70's has caused a constant demand from mercerizing plants as well as others for its product.

Quotations and samples promptly submitted.

H. A. FLORSHEIM, *General Sales Mgr.*
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GRAY MFG. CO. ARLINGTON COTTON MILLS
FLINT MFG. CO. MYRTLE MILLS, INC.
ARROW MILLS, INC. ARKRAY MILLS, INC.

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"Direct to Consumer"

COTTON YARNS

MERCERIZED

Ply yarns of SPINNERS PROCESSING COMPANY. Noted for evenness, lustre, workmanship, knitting and finishing excellence. Full range of numbers delivered in any form of put-up,—natural —gassed—bleached—dyed.

Single yarns of THE ELMORE COMPANY, generally recognized as peculiarly adapted to all plaiting and splicing purposes. Available in all counts to 100/1 and 120/2—bleached—tinted, or dyed.

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Yarns from the JOHNSTON chain of thoroughly modern and capably managed mills are sold under the name and added guarantee of each mill that these yarns must be satisfactory.

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Forrest Mercerizing Co.

MERCERIZERS SINCE 1895
Specialists in

90/2
100/2
120/2
140/2

Super Quality
Plaiting and Splicing Yarns

"It floats off the cone"

(Reg. U. S. Pat. Off.) *REMARKABLE STRENGTH*

30/1
40/1
50/1
60/1
70/1
80/1
90/1
100/1

Tinted Yarns

Licensed under the Wilcox Patent No. 1,496,696

Sales Office: FORREST BROTHERS
Forrest Bldg., 119 So. 4th St., Philadelphia.

COTTON YARNS

Gain in U. S. Exports of Cotton Yarns

WASHINGTON, D. C.—Exports of cotton yarns during the first eight months of this year amounted to more than 16,000,000 lbs., valued at $8,480,000, compared with 15,000,000 lbs. valued at $8,100,000 in the corresponding period of 1925, according to the Textile Division of the Department of Commerce. In 1925 total exports of cotton yarn from the United States amounted to 21,700,000 lbs. with a value of almost $12,000,000 which was a 60% increase in both volume and value over the 1924 exports.

South America affords the principal export outlet for American cotton yarns, having taken approximately 16,620,000 lbs. in 1925 against only 10,353,000 lbs. in 1924. Argentina continued to be the best customer for American cotton yarns, shipments to that country having accounted for 55% of the total exports in 1924 and for 53% in 1925. A large share of the export trade with Argentina is in yarns for weaving duck, but considerable business is also done in hosiery yarns. All other South American countries, except Peru, likewise increased their purchase of yarn.

Spinners May Complicate Market

Possibility of Stock Accumulations After Current Yarn Orders Have Been Filled

IT is believed there is prospect of spinners proceeding in such a way as to further complicate what is today a mixed situation in the cotton yarn market. On an average it is believed, according to opinions voiced by selling agents, that spinners are sold ahead on their product to the last of November. Of course this means there are those who have orders which will keep their machinery running much further than this date and also those who are in need of business at the present time. If history repeats itself, which it has a habit of doing, yarn selling agents predict that after spinners have filled the orders on their books they will continue to operate and pile up a stock of yarn which may be forced on the market, to its further demoralization. It is hard to see why such a course should be pursued but it has been the case in the past and a good many fear this situation will be witnessed.

Buying More Widespread

While the last few days have shown a narrowing tendency to business in the yarn market, for the last week or two a decided expansion in inquiry and in actual orders placed has been noted. Buyers are apparently of the belief they are not running very much risk in placing orders on today's market level. They argue that even though cotton and possibly yarn may go a little lower, both are cheap today and if any radical trend is to develop it is likely to be upward rather than downward. Naturally much will depend upon the next report as to the course of cotton and yarn prices but there are a good many consumers who feel they can take a chance and anticipate slightly where they have not been willing to do so on a higher level. Inquiries and actual sales have been received from the narrow fabric trade, the insulating trade, lace curtain and plush manufacturers as well as producers of cotton worsteds. The latter has been a new development as this class of manufacturers has been decidedly quiet for a long time. Apparently they have received satisfactory orders on their product and are bent upon covering their requirements for yarn. It is known that a Philadelphia men's wear manufacturer of cotton worsteds has well over 300,000 lbs. to buy to fill his orders. It is true his ideas of price are low for he is endeavoring to secure 8s-3 tinged on a basis of 18½c, whereas the market is 22 to 23c. It may be that he will buy only a small portion at the present time, hoping to scale down his costs by waiting until he is offered a lower level. Carpet manufacturers are showing a little more interest and it is believed that the fairly satisfactory prices obtained at the auction sales in New York will inspire a good many to operate on yarn.

Knitters Have Bought

While no general activity is apparent in the knitting trade, yet certain contracts have been placed at irregular prices. As a matter of fact, reports of more cheap prices have been circulated with respect to the knitting trade than on almost any other type of cotton yarn. Knitting yarn spinners have been fairly firm in their price attitude but within the last few days have accepted some offers that

Cotton Yarn Quotations

Carded—(Average Quality)

Double carded weav'g and knitt'g varn 2c to 4c higher, according to size

Single Skeins or Tubes—(Warp Twist)

4s to 8s	—	—26½	20s	—	—30
10s	—	—27	24s	32	—32½
12s	—	—27½	26s	33½	—34½
14s	—	—28	30s	—	—36
16s	—	—29	40s	—	—46

Two-Ply Skeins and Tubes

8s-2	26½	—27	26s-2	—	—34
10s-2	27—	27½	30s-2	36	—36½
12s-2	27½	—28	36s	—	—45
14s-2	—	—28½	40s-2	46	—47
16s-2	—	—29½	40s2 High breakage	50	—51
20s-2	30	—30½	50s-2	—	—56
24s	—	—32½	60s-2	—	—63

Single Warps

10s	—	—28½	24s	33½	—34
12s	—	—29	26s	34½	—35
14s	—	—29½	30s	36½	—37½
16s	—	—30½	40s	47	—48
20s	31	—31½			

Two-Ply Warps

8s-2	—	—27	24s-2	—	—33
10s-2	—	—27½	26s-2	34	—35
12s-2	—	—28	30s-2	36	—37
14s-2	—	—29	40s-2 ordinary	—	—47
16s-2	29½	—30	50s-2	—	—57
20s-2	—	—30	60s-2	—	—63

8s-3 and 4-ply skeins and tubes; tinged, 22-23c.; white, 25-26c.

Hosiery Cones (Frame Spun)

8s	—	—26	22s	30	—31
10s	—	—26	22s (silver and Jaeger)	—	—32
12s	—	—26½	24s	31	—32
14s	—	—27	26s	32½	—33
16s	—	—27½	30s tying in	—	—33
18s	—	—28	30s extra quality	35	—36
20s	29	—30	40s	—	—45

Combed Peeler—(Average Quality)

Warps, Skeins and Cones

20s-2	42	—44	50s-2	58	—60
30s-2	46	—48	60s-2	67	—70
36s-2	50	—52	70s-2	80	—85
40s-2	52	—54	80s-2	87½	—92½

Singles

12s	—	—36½	30s	46	—47
14s	—	—37	38s	49	—50
16s	—	—37½	40s	50	—51
18s	—	—38	50s	57	—59
20s	—	—39	60s	67	—69
24s	—	—42	70s	80	—82½
28s	—	—44½	80s	87½	—90

Mercerized Cones—(Combed, Ungassed)

26s-2	61	—63	80s-2	1 15	—1 17
30s-2	63	—66	**Singles**		
36s-2	67	—69	**30s**	—	—85
40s-2	69	—71	**40s**	—	—90
45s-2	73	—75	**50s**	—	—95
50s-2	76	—78	**60s**	—	—1 05
60s-2	85	—88	**70s**	—	—1 20
70s-2	99	—1 02	**80s**	—	—1 60

Peeler—(Super Quality)

Single Cones

	Carded		Combed			Carded		Combed	
10s	30	—31	40	—42	26s	36	—38	46	—48
14s	31	—32	41	—43	30s	38	—40	48	—50
16s	31½	—32½	42	—44	36s	44	—46	56	—58
18s	32	—33	43	—45	40s	48	—52	58	—60
20s	32½	—33½	44	—46	50s	—	—	65	—70
24s	34	—35	45	—47	60s	—	—	75	—80

Combed Cones, Warps and Tubes

20s-2	48	—50	40s-2	60	—65
24s-2	50	—52	50s-2	65	—70
28s-2	52	—54	60s-2	75	—80
30s-2	53	—55	70s-2	90	—95
36s-2	57	—60	80s-2	1 00	—1 05

Combed Reverse Twist Thread Yarns—Skeins, Tubes or Cones 2, 3, and 4-ply

	Peeler		Sakelarides	
	Average	Best	Average	Best
24s	— —56	— 62	82	85 —87
30s	— —56	— 65	85	89 —90
36s	— —58	— 67	88	92 —93
40s	— —63	— 71	92	96 —97
45s	— —68	— 76	97	1 02—1 03
50s	— —73	— 81	1 05	1 07—1 10
60s	— —83	— 91	1 15	1 18—1 20

Quotations are average prices of the counts and qualities indicated at the close of business Oct. 6. They do not cover lower or higher qualities unless specifically noted. For New York spot cotton prices, see page 147. For staple cotton prices, see page 149.

ABERFOYLE MANUFACTURING COMPANY

MERCERIZED YARNS

MAIN OFFICE
Bankers Trust Building
PHILADELPHIA

Johnston Building
CHARLOTTE, N. C.

323 So. Franklin St.
CHICAGO, ILL.

521 Court St.
READING, PA.

122 East 7th St.
LOS ANGELES, CAL.

James Building
CHATTANOOGA, TENN.

Westaway Building
HAMILTON, CANADA

MILLS
CHESTER, PA.

Cotton Yarns—Continued

evidence their willingness to trade. For instance, it is reported that a sale of 100,000 lbs. of 10s cones has been put through at 25½c net weight. This was regarded as a low figure as the majority are quoting 27c regular. Other counts of knitting yarn have been sold practically on this basis; mills have accepted 27c for 16s while 32c is quoted in instances to New York State knitters.

Short Sales Risky

Not so much is heard of short sales of late. There is a general feeling that the market has reached the point where short selling is becoming a dangerous proposition. It would be necessary to offer from one to two cents a pound under the market to effect a sale of this character and should the market for cotton advance and a corresponding increase in yarn prices of this amount be witnessed, not only would the dealer lose his commission but to this loss must be added the amount of the increase. As a consequence sellers are pursuing a conservative course and the spread between spinners' prices and accepted figures in the selling market is by no means as great as it was. Export trade is reported fair with ability to secure satisfactory prices. Certain lots are pending for sale to the export trade and if orders are consummated they will be of satisfactory proportions.

Market Difficult for Sellers

It is a complicated market for the seller and he is having a good deal of difficulty in putting through transactions with mills. General inquiry on specific counts of yarn discloses the fact that the majority of spinners are unwilling to meet the buyer's idea and yet frequently from an unexpected source comes an unsolicited offer on the part of a mill to accept business at a price which has been regarded as utterly impossible. Other spinners are trying to secure the last possible fraction of a cent and are resorting to subterfuges in instances to obtain their desired figure.

One or two illustrations may convey the meaning of the above in a definite measure. On a certain count of knitting yarn a seller had attempted to secure a price of 27½c from a mill. As this was a fairly good price the spinner accepted. When the order was wired to the spinner he came back with a return telegram to the effect that he would accept the order at 28c. Disgusted with this sort of treatment the seller wired back that the spinner's telegrams were unintelligible and evasive and if he would not accept 27½c he could forget the order. The consequence was that the spinner accepted the business at 27½c. In another case a dealer attempted to secure a price on 10s single from a mill. The answer came back, 33¼c and a second attempt to get a lower figure evoked the same reply. The order on which the dealer was working was placed at 31¼c. The day after the transaction was completed the spinner who had been asked for a price came back with an offer of 31½c. The dealer is now trying to figure whether he was being held up until the transaction had been placed elsewhere or whether the spinner hearing of the order concluded he had better revise his figures.

Yarn Firm Removes

The Ralph P. Levye Textile Co., cotton, silk, woolen, worsted and rayon yarns, has removed from 270 North Main St., Providence, R. I., to 29 River St., Pawtucket, R. I.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, etc., required by the Act of Congress of August 24, 1912, of TEXTILE WORLD, published weekly at Albany, N. Y., for October 1, 1926.

State of New York } ss.:
County of New York }

Before me, a Notary Public in and for the State and County aforesaid, personally appeared J. H. Bragdon, who, having been duly sworn according to law, deposes and says that he is the treasurer of the TEXTILE WORLD and that the following is to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Bragdon, Lord & Nagle Co., Inc., 334 Fourth Avenue, New York, N. Y.; Editor, C. H. Clark, 65 Franklin Street, Boston, Mass.; Managing Editor, V. E. Carroll, 334 Fourth Avenue, New York, N. Y.; Business Managers, H. O. Barnes, 334 Fourth Avenue, New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent. or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company or other unincorporated concern, its name and address, as well as those of each individual member must be given.) Bragdon, Lord & Nagle Co., Inc., 334 Fourth Avenue, New York, N. Y.; Henry G. Lord, 65 Franklin Street, Boston, Mass.; Adelaide F. Lord, 65 Franklin Street, Boston, Mass.; Frank L. Nagle, 65 Franklin Street, Boston, Mass.; J. H. Bragdon, 334 Fourth Avenue, New York, N. Y.; H. O. Barnes, 334 Fourth Avenue, New York, N. Y.; C. H. Clark, 65 Franklin Street, Boston, Mass.; S. H. Steele, 828 Drexel Building, Philadelphia, Pa.; V. E. Carroll, 334 Fourth Avenue, New York, N. Y.; C. Hutton, 65 Franklin Street, Boston, Mass.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state). None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given, also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is 8,787. (This information is required from daily publications only.)

J. H. BRAGDON,
Treasurer.

Sworn to and subscribed before me this 27th day of September, 1926.
(Seal) HENRY NELS PETERSON,
Notary Public, Bronx County, No. 25.
Certificate filed in New York County, No. 140.
My commission expires March 30, 1928.

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COTTON YARNS
COMBED PEELER, 24s to 80s, single and plies
CONES, TUBES, SKEINS AND WARPS
Samples and quotations promptly furnished
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SWIFT SPINNING MILLS
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Whites, Stock, Dyed and Heathers
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Superior Quality Knitting Yarns
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8s to 30s Extra Carded

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Our Specialty—
SINGLE Mercerized

Yarn for Splicing and Plaiting

Single Mercerized Yarns up to 100/1—Also Two Ply Mercerized 100/s to 140/s

Tinted yarns Licensed under Patent No. 1,496,696.

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PRISCILLA SPINNING CO.

Gastonia, N. C.

W. T. Love, *Pres.* J. B. Reeves, *Sec.* S. A. Robinson, *Treas.*

Long Staple Combed Peelers
Warps, Skeins, Tubes, Cones,
one to four plies

For the Weaver or Knitter who is particular —for the man who takes pride in producing a ***better*** fabric or garment—PRISCILLA Yarns have a special appeal.
Their uniformly high quality is a foundation upon which can be built the kind of business that ***sticks.***
Samples and prices cheerfully furnished.

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SELLING THE OUTPUT OF OVER 150000 COMBED YARN SPINDLES IN N.C.
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ALL COUNTS UP TO 100'S
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People regard a trade-mark by what's behind it.

The attractive Belmont "coat of arms" is a newcomer on the mercerized yarn horizon. Already users of mercerized yarns are looking to it as a symbol of the highest integrity in mercerized yarn production.
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BELMONT YARNS

CONES COPS TUBES WARPS SKEINS

Cotton Yarns—Continued

Bargain Hunters Buy Cotton Yarn

Large Sales Reported by Dealers Who Are Willing to Anticipate Further Decline

PHILADELPHIA.

AN unusual market has been witnessed this week. Although cotton and yarns have continued their drastic and sudden decline, prices of both having dropped another cent by the middle of the week as compared with a week ago, there has been a substantial movement of yarn to manufacturers and in addition a fair number of exceptionally large contracts were reported, one being placed this week of same size as the largest made a week ago, for 400,000 lbs., the largest individual order placed in this market for several years. Other dealers report sales of 100,000 lbs. each with deliveries running beyond first of the year, calling for both weaving and knitting yarns and the fact is generally agreed upon that an unusually large amount of new business is coming into the market. This is going to dealers who are willing to anticipate the decline by a cent or more.

In other words, there are many consumers of yarn today, this applying more particularly to carded qualities to date, as combed and mercerized yarns are reported quiet, who feel prices have now reached a low enough level to justify a conservative amount of optimism among consumers and more confidence in the market. While cotton and yarns may reach still lower level, upon the basis of past experience, during the last ten years for example, it is reasonable to assume prices will not go more than a cent of two lower at the most, if any, and upon this basis there are manufacturers quietly coming into the market, with purchases above the average in size being reported this week.

Business Good in Spots

This business, however, has not been equally distributed among all dealers here as many report an almost total lack of new orders for the week. Others report an especially active seven-day period with contracting beyond the end of the year not being infrequent. The answer to this unusual situation is found in the fact several large factors here have been anticipating the decline in cotton and yarns by as much as a week and have been selling yarns at a cent or more under the lowest prices their competitors will accept which in turn are based upon prices received at the time from spinners. In a short time the market has reached the level at which sales were made and when other dealers were then able to quote similar prices they find manufacturers uninterested in further quantities except at still lower prices.

At this time dealers and commission houses first mentioned have again reduced their prices under the lowest spinners' prices, by at least a cent and have then booked additional contracts and this is the condition found at the time of writing. Several dealers here are doing a good business notwithstanding the decline in cotton and yarns while many others, who are in the majority, are finding demand small at their prices and the total volume sold by this class has been small.

Bargain Hunters Active

With this uneven condition reported the conclusion may be drawn that there are many maunfacturers who are willing to take advantage of the present decline in prices, believing it affords them an unusual opportunity to cover. While they are not buying their full needs at one time they feel when cotton approaches a level not far above the low point reached during the last ten years, there is a fair degree of safety afforded them in anticipating yarn needs conservatively.

A policy of this sort is not inconsistent with the viewpoint of several that the bottom of the downward movement has yet to be seen. No one is willing to forecast lower cotton than 1cc under any possible contingency this year or at a maximum not more than 2c under current prices and granting that this does develop if a manufacturer purchased part of his requirements at present and later was able to buy a cent or two lower his average would remain a good one.

Large Yield Expected

There are others who believe there should be no rush to cover at present as it is their opinion an unusually large crop over 16,000,000 bales will be harvested and this being the case stability of cotton prices around the present level or slightly under will be seen, giving cotton yarn consumers ample opportunity of buying all they need at low prices.

Which of these opinions on the future will prove to have been the correct diagnosis of the situation remains to be seen.

Decline Continues

Some Forward Buying of Carded Yarns—Combed Yarns Nominal

BOSTON.—The decline in prices of carded and combed yarns continues and was not checked by the partial reaction in cotton prices on Tuesday. Prices are very largely nominal, but there is something significant in the fact that they are stronger on most counts and varieties for prompt delivery than for forward delivery. Another significant factor is the active buying on a scale-down of a few large operators, this buying being largely confined to medium and coarse

CANNON YARNS

The Allen A Company, selling direct to retailers, has maintained present prices on men's light weight ribbed union suits for the new spring season, but it will use combed yarn. This is the first season this has been possible since 1916, officials said.

Journal of Commerce, Sept. 13

The above news item suggests an unmistakable trend recently to Combed yarn.

Cannon Mills, Inc. offer a wide range of quality combed yarns from its own group of mills — in counts 8s to 100s.

THE CANNON MILLS
INC.
PHILADELPHIA

New York Providence Boston
Reading, Pa. Chicago Utica, N. Y.
Chattanooga

THE STANDARD OF VALUE & QUALITY

COTTON PRODUCTS COMPANY

Bankers Trust Building, Philadelphia, Pa.

Selling Agents for

SOUTHERN MERCERIZING COMPANY
Tryon, N. C.
Single Mercerized Yarns

A. M. SMYRE MFG. CO.
Gastonia, N. C.
Combed Peeler Yarns
30's to 70's
Weaving and Knitting

DIXIE

MERCERIZED—AIR DRIED

YARNS

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Dalglish & Co.,
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MANCHESTER, ENGLAND

Spinners and Doublers of Fine Cotton Yarns, especially adapted for the making of Laces, Curtains, Voile, Fine Hosiery, Dress Goods, Gloves and for insulating wires.

Representative for U. S.

F. C. CHAMBERS
3750 L. Street, Philadelphia, Pa.

Cotton Yarns—Continued

count carded yarns including tire yarns.

Some idea of the nominal status of prices may be gained from the fact that 20s-2 warps have sold this week all the way from 30 to 34c; 30c was paid for an ordinary grade for forward delivery and 31c for spot delivery; 34c was paid for prompt delivery for a high grade yarn which could probably be bought for forward delivery at not more than 33c. Much the same situation exists in the hosiery yarn division of the market, where 26½c has been paid for 10s frame-spun cones for prompt delivery and 25½ to 26c for forward delivery.

A few large operators have been buying steadily for forward delivery ever since cotton broke 15c and have continued these operations on a scale-down; such buying, however, is about as scarce as the buying of cotton by spinners on a scale-down. The majority of cotton and yarn buyers are waiting as usual for the raw material to touch bottom, and when that time arrives the market probably will be flooded with orders and a rapid reaction will ensue that will give few buyers the opportunity to get in anywhere near the bottom.

Combed and mercerized yarns are even more unsettled in price than carded yarns, and in the absence of business of any considerable volume prices are purely nominal. An ordinary grade of 58s-2 combed peeler mercerizing warps is said to be available in the South as low as 65c, although 67 to 68c is the nominal quotation, and for a higher grade yarn 70 to 72c is asked. Few eastern spinners have shaded a minimum of 75c for this count, and are nominally asking a basis of 75-80c for 60s-2 combed peeler warps and skeins. The previous low basis for this season of 38c for 18s combed peeler cones of southern spinning has been touched again and eastern yarns can be bought as low as 42c for an average grade, and 43 to 45c for a high grade. On combed yarns there is an even wider margin between prices for prompt and for forward delivery and this is warranted by the price position of staple cotton; very little spot cotton can be picked up at prices within 5 or 6c a pound of the same length and grade for October-November delivery and few spinners have more cotton in stock than is needed to take care of contracts for yarns.

Slow Market for Yarns at Chattanooga

CHATTANOOGA, TENN.—The break in cotton and the prospects of cheap cotton have cast a dampening effect upon the local yarn market according to a leading spinner and mercerizer here. Prices on cotton and mercerized yarns are continued at about the same level so far but little activity, comparatively speaking, is reported.

For 60s-2 mercerized 85 to 87c, is still quoted, while 10s combed is around 30 to 31c.

Confused Waste Market

Drop in Cotton to Near Pre-War Level Disrupts Market

BOSTON.—Prices in the cotton waste market are in confusion. The further decline in cotton and the very bearish sentiment developing which is leading cotton holders in the South to press their cotton for sale is bringing about a semi-chaos in wastes. The chief favorable feature of the situation lies in the probability that contractors later in the year will be able to carry through their negotiations on a much lower basis than last year. Low cotton and a lower waste basis will work wonders for the waste trade, it is believed. Wastes are likely to be less disturbed than cotton.

The bearish crop estimate has about shot the market to pieces. Prior to its release wastes had been going along quite steadily at firm prices and several of the big contracting houses were quietly unloading their higher-priced materials at the best values obtainable with an eye to taking shorter-time contracts at the close of the year. Values on the street are again all at sea and consuming purchases have been halted in expectation of bargains.

In the general price disorder caused by the drop in cotton values, thread wastes have held their own. They stand in a class by themselves and for two reasons: the first being that their output is rigidly controlled and kept to a close minimum in most mills and, second, their consuming outlet in the country as a whole and not the textile industry which for more than two years has been far behind the general prosperity of the United States. They are at all times good property and as the bulk is limited there is less speculation seen in them than in other types of mill waste.

Current Quotations

Peeler comber	Nominal	12½—13c.
Peeler strips	10	—10½c.
Egyptian comber	10	—10½c.
Choice willowed fly	5½	— 6c.
Choice willowed picker	4	— 4½c.
Sak. strips	15	—15½c.
Linters (mill run)	5	— 5½c.
Spoolers (single)	13½	—14c.
Fine White cop	12	—12½c.

Southern Yarn Bulletin

CHARLOTTE, N. C.—The cotton yarn bulletin of the Southern Yarn Spinners' Association, issued under date of Sept. 29, follows: "Trading since the Government report of Sept. 23 has been practically at a standstill. Dealers' prices have been shaded irregularly. Spinners' prices are held firm at a considerable advance over market quotations, and in no degree reflect the recent slump in cotton values. It is understood that spinners generally are supplied with orders at profitable figures for about 60 days run, and are unwilling to make further commitments until the cotton market had steadied. The figures of the Sept. 23 Government estimate came as a surprise to the trade in general, and for the time being has discouraged trading."

J. B. JAMIESON COMPANY
COTTON YARNS
77 SUMMER ST. BOSTON, MASS.

Experience linked with Service — Insure your entire satisfaction
Weaving—COTTON YARNS—Knitting
Sold by
"Industrial"
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INDUSTRIAL YARN CORPORATION
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THE JOHN F. TRAINOR CO.
COTTON YARNS
NATIONAL CITY BUILDING
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GATE CITY COTTON MILLS
Manufacturers of
Superior Quality
WHITE KNITTING YARN on CONES
We sell direct to Knitters and guarantee satisfaction
217 Trust Co. of Georgia Bldg., ATLANTA, GA.

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Room 922, Webster Bldg. 327 So. LaSalle St., Chicago

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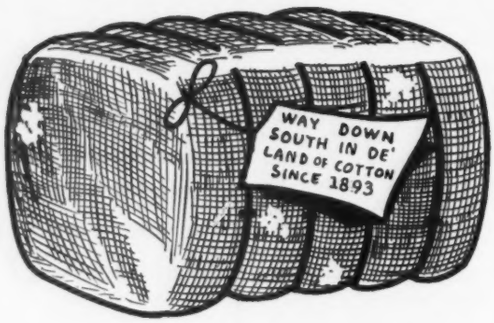
COTTON YARNS
Carded and Combed—Gassed and Ungassed

EWING-THOMAS CONVERTING CO.
Specialists in Mercerized Yarns CHESTER, PA.
Warp Mercerizing for the Trade
Gassed—Natural—Bleached—Colors
DOUBLE MERCERIZED SPECIAL PROCESS

Jos. Newburger, President
D. W. Brooks, Vice President



W. H. Willey, Vice President
Norman Monaghan, Secy-Treasurer

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Way back in 1893 we established our Hall Mark of conscientious service and quality goods.

Our thirty-three years of sincere effort in offering the textile industry something more than a dependable business connection has gained us, today, the unfaultering confidence of our every client and marked us as the premier cotton peers of the great southland.

May we serve you, too?

Capital $1,000,000.00

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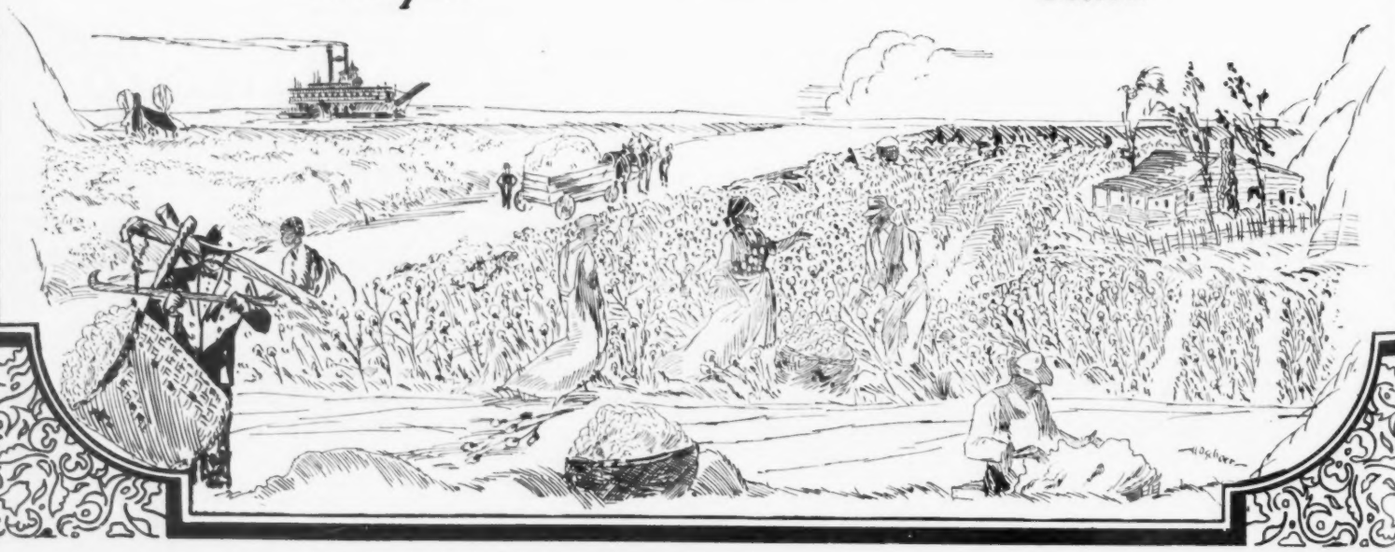

COTTON

Cotton Break Halts at 13c Level

Investment Interest Developing "Below Cost of Production," but Heavy Movement Ahead

THE decline started by the increased crop estimates of last month, carried prices through the 13c level in the cotton market here at the beginning of the week. December contracts sold at 12.97, or 528 points below the high price of Sept. 8, before the break was checked by covering and trade or investment buying. Since then the market has been steadier. Whether this has reflected merely a strong technical position and a disposition to accept profits on short contracts with the approach of another Government report, or something of broader significance, did not seem altogether clear at the close on Wednesday. Neverthless reports reaching here from the South suggested that a disposition to hold cotton was becoming a little more general, while there was such general comment upon prices as below the cost of production that it seemed something of an investment interest was developing.

The larger ideas of the crop were encouraged before the publication of the Government's report on Friday by the increase shown by the private end-September figures. These pointed to a crop about 800,000 bales above the mid-month figures, on the average, and some of the private indications ranged up to 16,636,000 bales, excluding linters. The action of the market suggested that a Government report of over 16,000,000 bales had been discounted in the technical position, however, and that cotton was not without friends below the 13½c level. Whether this feeling is general enough or confident enough to prevent further declines, remains to be seen, and probably depends largely upon the further attitude of the South. Up to the close of this week less than 4,000,000 bales of cotton have come into sight, which on the assumption that the crop is in the neighborhood of 17,000,000 bales including linters, means that about 13,000,000 bales are still to come, and many traders feel that it is too early in the season to expect anything like a really general or effective holding movement.

Nevertheless, the volume of hedge selling here shows a tendency to taper off toward the end of the week, and it would look as though liquidation of spot holders or the more urgent hedging against nearby receipts had pretty well run its course during the last fortnight. A renewal of heavy southern offerings and hedging could hardly be absorbed without further declines in prices, but if the South is able and willing to market slowly, investment interest based on the price level would undoubtedly broaden. Trade interests have been among the good buyers during the week but have shown more disposition to operate on scale down orders than to follow advances.

The following table shows Wednesday's closing quotations in the leading spot markets of the country, with the usual comparisons:

Market	Sept. 29	Oct. 6	Ch'ge	Last year	Sales
Galveston	14.67	15.30	—135	22.65	4,415
New Orleans	14 43	13.05	—138	22.25	94,068
Mobile	13.75	12.50	—125	21.90	1,219
Savannah	14.00	12.71	—129	22.16	3,264
Norfolk	14.13	12.81	—132	22.25	4,722
New York	15.20	13.65	—155	23.10	300
Augusta	13.88	12.56	—132	22.00	7,951
Memphis	13.75	13.00	— 75	22.75	24,850
St. Louis	14.00	13.00	—100	22.75	.....
Houston	14.55	13.25	—130	22.56	62,242
Dallas	13.70	12.30	—140	22.45	151,305

The following differences on and off middlings are given as compiled from the reports received by the New York Cotton Exchange. The cotton grades marked ** are not delivered on contract.

	Dallas	Memphis	Montgomery	Augusta	Average
WHITE GRADES					
M. F	1.25†	1.25†	1.05†	.83†	1.07†
S. G. M	1.00†	1.00†	.90†	.68†	.85†
G. M	.75†	.75†	.75†	.53†	.62†
S. M	.50†	.50†	.50†	.38†	.42†
S. L. M	1.25*	1.50*	1.25*	1.25*	1.13*
L. M	3.25*	3.50*	3.50*	3.00*	2.98*
S. G. O.**	5.25*	6.00*	5.50*	4.50*	4.80*
G. O	6.50*	7.50*	7.00*	6.00*	6.23*
YELLOW TINGED					
G. M	.75*	1.00*	.50*	.50*	.75*
S. M	1.00*	1.50*	1.00*	1.00*	1.22*
M.**	2.50*	3.00*	2.50*	2.50*	2.78*
S. L. M.**	4.00*	4.50*	4.00*	4.00*	4.10*
L. M.**	6.00*	6.50*	5.50*	5.50*	5.62*
YELLOW STAINED					
G. M	2.25*	3.00*	2.00*	2.00*	2.32*
S. M.**	2.75*	3.50*	2.50*	2.50*	2.87*
M.**	4.00*	4.00*	3.25*	3.25	3.58*
BLUE STAINED					
G. M.*	2.50*	3.00*	2.00*	2.00*	2 22*
S. M.**	3.00*	3.50*	2.75*	2.75*	2 99*
M.**	4.00*	4.00*	3.75*	3.75*	3 88*

*Off Middling † Middling.

COTTON STATISTICAL DATA
(Fluctuations of Futures)

	Closed Sept. 30	For week High	For week Low	Closed Oct. 6	Net Ch'ge
October	14.38	14.55	13.17	13.52	— .86
November	14.39	14.39	12.93	13.17	—1.22
December	14.40	14.55	12.97	13.28	—1.12
January	14.46	14.63	13.04	13.37	—1.09
February	14.56	14.56	13.22	13.47	—1.09
March	14.66	14.83	13.27	13.58	—1.08
April	14.76	14.76	13.40	13.67	—1.09
May	14.86	15.02	13.45	13.78	—1.08
June	14.91	14.91	13.60	13.87	—1.04
July	14.96	15.15	13.63	13.97	— .99

SPOT FLUCTUATIONS FOR WEEK
(Middling)

	New York	New Orleans	Liverpool
Friday, Oct. 1	14.30c	13.50c	7.79d
Saturday, Oct. 2	13.70c	12.93c	7.54d
Monday, Oct. 4	13.35c	12.70c	7.36d
Tuesday, Oct. 5	13.80c	13.10c	7.25d
Wednesday, Oct. 6	13.65c	13.05c	7.32d
Thursday, Oct. 7	13.60c	12.90c	7.17d

SPOT FLUCTUATIONS AND STOCKS

	Prices Oct. 6	Stocks This week	Stocks Last year
Galveston	13.30	329,512	270,537
New Orleans	13.05	262,392	312,304
Mobile	12.50	24,519	34,942
Savannah	12.71	153,239	158,341
Charleston	.....	77,445	47,993
Wilmington	.....	20,105	23,915
Norfolk	12.81	60,596	61,818
Baltimore	13.10	914	840
Augusta	12.56	77,774	93,089
Memphis	13.00	182,914	100,117
St. Louis	13.00	10,111	922
Houston	13.25	407,826	411,036
Little Rock	13.00	51,521	33,108

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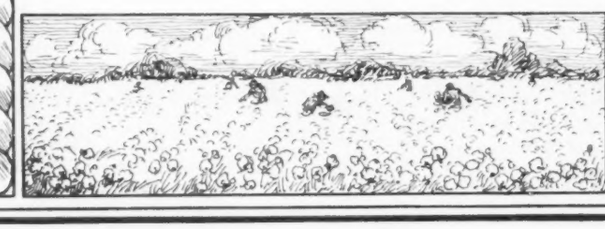

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Cotton—Continued

Declines Check Demand

Memphis Market Cheerless—Texas May Produce 5,000,000 Bales

MEMPHIS, TENN., Oct. 4.—Further extensive price declines appear to have checked demand for cotton. Receipts are now reaching good daily totals but sales are comparatively small and unsold stocks are rapidly increasing. While these sales do not reflect the volume of business being done by shippers and exporters, for the reason that they appear not immediately concerned about covering forward commitments, mill demand seems to be comparatively light. Some large shippers say they are doing almost nothing and receiving few inquiries. Staples have declined along with contracts but premiums are pretty well maintained. Opinion prevails that regardless of the size of the general crop there will not be an oversupply of staples; opinions as to the delta crop have been increased and now average around 600,000 bales. Ideas as to the belt have been largely increased; predictions that the crop will be below 15,000,000 bales are now rare, while some as short a time ago as two weeks, were under 14,000,000 bales; some are now as high as 17,000,000 bales, although they are regarded as extreme.

While Government and private reports have had some influence personal observation, and statements of individual farmers as to how their crops are turning out are the controlling influences in altering opinion. The writer spent several days of the week in Texas. The crop in the north, north-central and northeast sections visited, can now be very satisfactorily observed from a car window or automobile since most of it is open; Texas businessmen and bankers do not admit the possibility that Texas can produce 5,000,000 bales, but it seems highly probable that the yield will considerably exceed 5,000,000 bales.

The market here is a cheerless one. It is quite generally recognized that prices are below cost of production and the end of the decline not yet in sight. Holding movements, acreage reduction and crop abandonment are being talked. It is improbable that any important number of bales will be lost through crop abandonment, acreage reduction is a possibility of several months hence and therefore exerts no immediate influence; holding would have to be organized and of adequate dimensions to do any good. Some growers have hedged their crops, fixing prices all the way down from 18 to about 13.50c. Weather conditions during the week, except for excessive rains in Oklahoma, were favorable for further additions to the crop.

Extra Staples Weaker

Some Buying of Basis at Lower Prices

BOSTON, Oct. 6.—Practically all grades and lengths of extra staple domestic cottons are weaker on basis as well as a result of the additional decline in futures. Basis on middling and better grades of premium cottons shorter than 1⅛ in. is considerably firmer than on extra staples. Egyptians have suffered a further decline of about 150 points, but are relatively much higher than domestic staples; on a net weight basis medium uppers are now about 4c higher than a full 1 3/16 in. hard western cotton, assuming that the latter can be bought at 500 points on December as reported. Egyptian Sak. is even higher relatively than is Uppers, yet a high grade Sak. at 36 to 37c, on a net weight basis, is much cheaper than Pima cotton at 38 to 39c. Only those mills who must have these cottons are buying and it is currently reported that a little No. 2 Pima was sold recently as high as 40c.

Quotations for extra staple cottons for October-November shipment or sailing are more or less nominal owing to the wide disparity between basis asked by different shippers and on small and large lots. Our quotations are about an average of the market and the minimums may be shaded as much as 50 to 75 points and the maximum figures may be quite as much below asking prices of certain shippers.

Current Quotations

Average prices for Oct.-Nov. shipments of middling and strict middling hard western cottons (Government lengths) are as follows:

	Middling	St. Middling
1 1/16 in.	16½to17c.	17 to18c.
1 1/16 in. to ⅛ in.	17 to17½c.	17½to18½c.
1 ¼ in.	17½to18½c.	18 to19c.
1 3/16 in.	19 to20c.	20 to21c.
1 ¼ in.	23 to25c.	24 to26c.

Basis on N. Y. Dec. 13.28c.

John Malloch & Co., Boston, quote Egyptian cotton, c. i. f. Boston for Nov.-Dec. shipment as follows: Medium Sakellarides 30⅜c, off 1¾, Medium Uppers, 21½c, off 1½c, from Sept. 29. They report closing prices Oct. 6 on the Alexandria exchange as follows: Oct. Uppers $18.85, off $1.55; Nov. Sak. $29.03, off $1.50 from Sept. 29.

Market Statistics

Basis Middling

	Saturday, Oct. 2	Saturday, Sept 25
10 markets average	12.76	14.37
Memphis	13.00	14.50

Premium Staples

First Sales from Factors Tables at Memphis

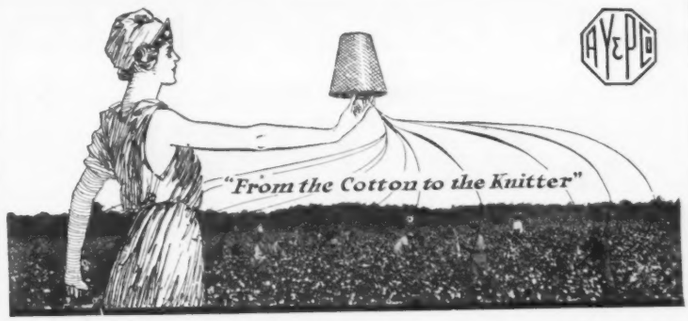
Grade Strict Middling	Prices easy
1¼-in.	16.50@17.50c
1 3/16-in.	17.50@19c
1¼-in.	24 @26½c

Current Sales

	For week	Prev. week	Week before
Memphis total	21,200	17,050	9,750
P. o. b. included	13,650	13,450	7,850
10 markets	198,207	172,441	205,165

Memphis Receipts, Shipments, Etc.

	For week	Last year	Year before
Net receipts	35,973	32,977	12,136
Gross receipts	61,322	57,519	24,902
Total since Aug. 1, net	74,057	105,593	22,407
Shipments	30,910	36,321	15,789
Total since Aug. 1	167,094	107,453	65,469
Total stock	162,167	84,591	35,490
Increase for week	30,432	21,198	9,113
Unsold stock in hands of Memphis factors	65,000	53,000	.....



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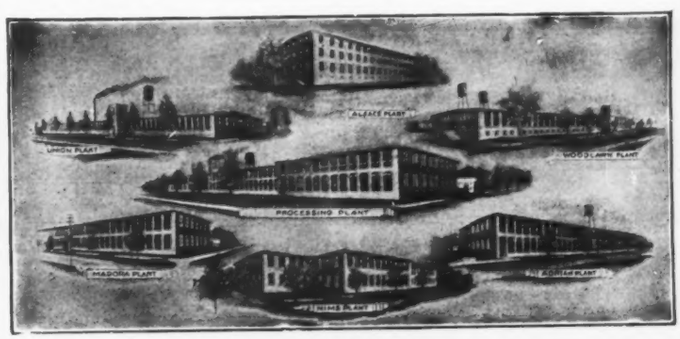

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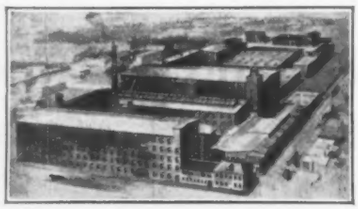

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WORSTED YARNS

Firmer Top Market and More Business

Less Difficulty Met in Securing Reasonable Advances—Noils Sell at Old Prices

BOSTON.—The situation in the top market seems more healthy. It is not quite so difficult to secure the moderate advances compelled by strong situation in the wool market. Much of the business done recently has been fine and high 3/8c blood tops. There has also been a fair business done in dry combed tops for French spinners on a $1.32-$1.35 basis. Prices on fine tops are somewhat irregular ranging all the way from $1.35 to $1.40 and with $1.42 asked on additional business on strictly fine territory tops. In 1/4 bloods some topmakers have been able to secure the best price for several weeks at least one large order being placed at 97½c. The market quotation for 50s stands at 97-98c. Tops grading below 50s have been quite inactive during the past week. The Bradford market is very firm on price level established at the close of last month.

The noil market is broadening out. Mills are still able to purchase on the old price level. The best fine noils have been pegged at 83c for several weeks while during this period wools have risen 5-7c per pound. Mohair noils are more active. There is a better call for medium noils. Colored noils are still inactive. Specialty noils are in steady use in small quantities with prices nominal. Of interest to importers is the change in the situation in the Bradford market. Heavy stocks of medium and crossbred noils were a source of anxiety to combers and others, but these have now been reduced to such an extent that the situation is improved greatly and British mills are now buying more of the supplies ahead.

Top and Noil Quotations

Tops—Boston	
Fine (64–66s)	$1.40–$1.42
Super 64s Aus.	1.54– 1.55
Half-blood (60–62s)	1.30– 1.32
High ⅜ blood (58s)	1.15– 1.16
Aver. ⅜ blood (56s)	1.10– 1.12
Low ⅜ blood (52–56s)	1.02– 1.03
High ¼ blood (50s)	.97– .98
46s	.90– .91
44s	.85– .86
40s	.82– .83
36s	.82– .83
Tops—Bradford	
Fine (70s)	54d
Fine (64s)	51d
Half-blood (60s)	45½d
Three-eighths blood (56s)	34d
Quarter-blood (50s)	26½d
Cross-bred (46s)	22½d
Noils—Boston	
Fine	$.80– $.82
Half-blood	.71– .73
High ⅜ blood	.63– .68
Aver. ⅜ blood	.60– .65
Low ⅜ blood	.55– .60
High ¼ blood	.53– .55
46s	.50– .51
44s	.48– .50
40s	.47– .40

Scarcity of Spot Worsted Yarns

Knitting Yarns in Strong Position for Nearby Shipments—Prices Have Not Advanced

PHILADELPHIA.

INCREASE in demand for worsted yarns which has been apparent during recent weeks has caught spinners unawares and an exceptionally strong situation in regard to stocks has developed. Knitting yarn spinners in this vicinity report what amounts to a complete lack of supplies of all counts for immediate shipment and this has reached such an acute stage in many instances that manufacturers having an excess of any particular count have been willing to exchange this for other counts held by competitors which they need for immediate use and have been unable to secure from spinners. Demand for spot supplies by knitters has developed into a unique situation in other respects. Spinners report in several instances their customers have expressed a willingness to take in higher priced contracts at this time, indicating this condition has not been exaggerated.

Stock Lots Not Available

Spinning plants which were running half time during a major portion of the first half of the year, are now operating full time or better, this being dependent in most instances upon the amount of trained help they are able to secure. A number of spinners of both weaving and knitting yarns are now running two shifts a day in their endeavor to book as much business as possible while the demand continues strong. With this tendency to expand production of yarn the feature in the market has been that stocks during the last two months have not only failed to increase but have actually continued to decrease, this applying especially to outerwear counts which have been particularly active in this period. Spinners of these yarns report they are still receiving a larger volume of new business a week than they are able to produce in a like period. Spot yarns are being sought by manufacturers, spinners and dealers with little success as far as important sized quantities are concerned.

During the first half of this year the tendency on the part of the entire trade, spinners as well as manufacturers, was to keep their inventories as low as possible and in this they attained success. As a result reports from spinners indicated, at the turn of the year, smaller supplies of stock yarns on hand than had been noted previously for several years.

This was the condition faced by spinners when demand from manufacturers manifested a substantial increase early in July. Since that time sales of yarn have continued to expand, the feature of these contracts being that all manufacturers wanted nearby deliveries and displayed little or no interest in contracts running further ahead than the first of the year.

Lack of Spot Goods General

Lack of spot supplies is not confined to spinners nor to yarns but is also apparent in wools as well as in finished goods. Spinners as a rule have not more than a few weeks' supply of wool in their warehouses; especially is this true of knitting yarns spinners in this section and reports indicate future supplies of wool, of domestic fleece quality largely used in these yarns, are not excessive and in fact there are many who are looking ahead and do not hesitate to state that in their opinion spinners will have difficulty at the end of the year in locating such wools, which in turn will make further increases in price probable.

From the manufacturers' standpoint the spot situation is not less impressive. This is proved by their demand during recent weeks for spot yarns and their comparatively small interest in contracts running far ahead. They are interested in nearby deliveries or not at all. Lines of outerwear which have been in popular favor this season have long been dull and as a result there are few manufacturers in a good position to meet the strong spot demand from jobbers and retailers for these lines. Their stocks in these garments have been depleted and in addition they have no stocks of yarn upon which to draw to start immediate manufacture, being dependent upon deliveries from spinners. This condition was general enough to have caused the present spurt in outer wear yarns.

Stabilization Attained

With a firm condition apparent from yarns to finished goods the natural thing to have expected during the yast two months would have been a gradual and steady increase in prices, as it was generally conceded early in July that spinners were not able to secure their margin. The unusual, however, actually occurred and since that time no change has been made in yarns, although exceptionally cheap prices quoted by a number are no longer obtainable. Prices have remained unchanged in the face of a strong and steady spot demand from a large number of manufacturers and with a strengthening of wool prices in all markets.

That this was the case is not regarded a mere coincidence by the trade but in fact is believed to have been due to deliberate foresight and policy on the part of several important factors in the spinning trade in an endeavor to stabilize prices and continue them at their present level as long as this is in any way possible; not through any altruistic motive but following the thought that was brought out at meetings held recently by the entire industry that stabilization would be beneficial not only to manufacturers but to spinners as well. Conversations with leaders in the spinning trade lead one to venture the statement that many spinners, especially of knitting yarns, intend to do all possible to prevent the present demand resulting, as in years past, in a runaway market with constantly rising prices which invariably brought the spurt to an end.

Yarn Prices Not Advanced

Predictions are heard that higher prices will be noted before the end of the year, based upon the spot situation outlined and because of the tendency now apparent in the wool market, not only here but abroad. World markets are becoming firmer and higher in many instances and should this continue neutral observers believe the

WORSTED YARN QUOTATIONS

(Corrected to Close of Business Wednesday)

Bradford System	
2–12s, low com. (36s)	1.05–1.10
2–16s, low com. (36–40s)	1.10–1.15
2–20s to 2–24s, low ¼ (44s)	1.15–1.20
2–20s to 2–26s, ¼ bld. (46–48s)	1.25–1.30
2–26s to 2–30s, ¼ bld. (48s)	1.30–1.35
2–30s to 2–32s, ¼ bld. S. A. (46s)	1.35–1.40
2–32s, ¼ bld. (48–50s)	1.40–1.45
2–20s, ⅜ bld. (56s)	1.45–1.50
2–26s, ⅜ bld. (56s)	1.50–1.55
2–36s, ⅜ bld. (56s)	1.55–1.60
2–32s, ½ bld. (60s)	1.70–1.75
2–36s, ½ bld. (60s)	1.75–1.80
2–40s, ½ bld. (60–64s)	1.80–1.85
2–50s, high ½ bld. (64s)	1.95–2.00
2–50s, fine, (66–70s)	2.00–2.05
2–60s, fine (70s)	2.65–2.75

French System	
20s, ¼ bld. (48s)	1.40–1.45
20s, high ¼ bld. (50s)	1.50–1.55
20s, ⅜ bld. (56s)	1.55–1.60
30s, ⅜ bld. (56s)	1.65–1.70
30s, ½ bld. (60s)	1.80–1.85
40s, ½ bld. (60–64s)	1.90–1.95
50s, (66–70s)	2.15–2.20
60s, (70s)	2.65–2.70
Knitting Yarns in Oil (Bradford)	
2–20s low ¼ bld. (44s)	1.15–1.20
2–18s to 2–20s ¼ bld. (50s)	1.25–1.30
2–26s, ¼ bld. (50s)	1.30–1.35
2–30s, ¼ bld. (50s)	1.35–1.40
2–20s, ⅜ bld. (56s)	1.50–1.55
2–20s, ½ bld. (60s)	1.75–1.80
French Spun Merino White	
30s, 50–50	1.50–1.65
30s, 60–40	1.60–1.85
30s, 70–30	1.70–1.75
30s, 80–20	1.80–1.85

17 Colors—

All Sharply Recognizable Yet Quickly Solvent in the Kiers

ALL of the 17 "EMPIRE" colors and tints (all the colors of the spectrum and shades thereof) are deep enough to be readily distinguishable from one another, when marked on the roving—***but***, when placed in the hot water in the kiers or washing tanks, the proper solution of the coloring matter takes place easily and quickly (in not more than 5 or 6 hours) leaving no mark. And that's what you want a mill chalk to do.

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In these Roving or Yarn Scales No. 980 you are assured of the same high Quality as is found in all Brown & Sharpe Products. When purchasing equipment for the Sample Room, it pays to remember this: There is only *one* Brown & Sharpe Standard of Quality—the Highest.

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See also CONSOLIDATED TEXTILE CATALOG

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UNIFORM MERCERIZATION

Readiness of a fabric to absorb the dye is materially increased by the mercerizing process. Unequal mercerization, therefore, is often the direct cause of the dye showing heavy in some places and light in others. Everyone familiar with the product of the Acadia Mills knows he can depend upon its mercerized yarn having the uniform thoroughness of treatment necessary to make a rich, evenly dyed fabric.

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SEVENTH
SOUTHERN TEXTILE EXPOSITION
Textile Hall
GREENVILLE, S. C.

November 1st to 6th, inclusive, 1926

The Directors of Textile Hall Corporation and the Exhibitors cordially invite the manufacturers of the Nation and the members of their organizations to attend the Southern Textile Exposition, to be held in Textile Hall, Greenville, S. C., November 1st to 6th, 1926.

Attractive displays will be made by the leading manufacturers of textile machinery, equipment, accessories and supplies. The latest inventions and improvements will be shown.

An important feature will be the Club Room for executives, superintendents, overseers and other patrons. It will be exclusively for men. Writing tables, market reports and other things will be provided.

Capable committees, well trained by six previous successful expositions, will handle the entertainment and other items of the program, in which all Greenville citizens will co-operate. The Autumn convention of the Southern Textile Association will be held during Exposition week.

The hotels and homes of Greenville are equal to housing the large number of visitors who will attend. Please address Reservation Committee, 714 North Main Street, for prompt service.

Executives in other lines than the textile industry will find the Southern Textile Exposition interesting on account of the exhibits of motors, power transmission devices, anti-friction bearings, lubricants, paints, illuminating equipment and many other things which are used in all factories.

OPENING DAY NOVEMBER 1ST

Worsted Yarns—Continued

program of spinners to stabilize prices of yarns will meet with difficulty particularly in view of the fact that demand for yarns has expanded at the time of general strengthening in raw material markets. To date no increases in yarn prices have been made and spinners state that as long as this continues they feel a healthy demand for their product will be witnessed.

Conservative Yarn Buying

Novelties and Mixtures in Evidence—Bradford Strong

Conservative buying continues to feature the worsted yarn market. Standard Bradford spun yarns of the finer counts are not in particular demand, novelties and mixtures still dominating the situation and bringing relatively better prices than white yarns could command under prevailing unsatisfactory conditions. Tops are harder to buy at old prices and wools are just as firm as ever. There is more active interest being shown in knitting yarns 2-26s-2-30s and hosiery yarns are moving more freely but in both cases it is difficult to lift prices without encountering the strongest possible opposition from consumers.

Wool machinery statistics indicate a very general gain in mill activity during the month of August. Worsted spindles were 7.6% more active than in July while woolen spindles gained .8%. Combs and cards registered advances and looms also were busier, particularly those who engaged in carpets and rugs. The following table shows the change:

	Aug.	July	Percent Advance
Worsted spindles...	63.3	55.7	7.6
Woolen spindles....	66.7	65.9	.8
Wool combs.....	73.8	67.8	6.0
Wool cards.....	70.5	67.7	2.8

The tendency in the Bradford market is against the buyer on all counts and descriptions. Two-ply 16s, 36s, and 2-24s, 44s, are both up 1 penny per pound for the week. Fine counts are very firm. Yarns are said to be on a cheaper basis than tops. A similar situation exists in the Boston market. It is a general complaint among spinners that they cannot make replacement costs on most descriptions of yarns. Specifications on contracts are slowing up, much of the business thus placed being somewhat speculative.

BRADFORD YARN PRICES

	s	d
2-16s, 36s	2	2½
2-24s, 44s	2	5½
2-36s, 58s	4	4
2-48s, 64s	5	7
2-60s, 70s	6	10

Lower Export of Wool and Its Products from Bradford

WASHINGTON, D. C.—Bradford exports of wool and wool manufactures to the United States in August were even lower than in August, 1925, when exports were seriously curtailed by a textile workers' strike. Consul A. R. Thomson reports to the Department of Commerce that exports of wool and wool manufactures to this country in August had a total value of $1,119,072, against $1,306,334 in August last year. The decline centered principally in wool noils and waste and wool rags. Exports of wool were larger in quantity than a year ago, amounting to 1,316,979 lbs., against 1,274,339 lbs., but smaller in value $437,689 as compared to $509,732. Wool cloth exports also were larger this year than last, amounting to 243,784 lbs., valued at $381,506, as compared to 204,140 lbs., valued at $289,165.

August Wool Consumption Report

WASHINGTON, D. C.—The Department of Commerce has announced statistics with regard to the consumption of wool, by manufacturers in the United States during the month of August, based on reports received from 522 manufacturers operating 588 mills. The reporting mills are equipped with 53,916 looms, 4,965 sets of woolen cards, 2,120 worsted combs, and 3,477,082 spindles. This is exclusive of 20 manufacturers operating 72 mills, who failed to report for this month. These non-reporting mills are equipped with about 13,231 looms, 1,428 sets of woolen cards, 539 worsted combs, and 997,406 spindles.

The total quantities of wool entering into manufacture as reported for August, 1926, reduced to a grease equivalent was 40,858,854 pounds, as compared with 38,235,717 pounds for July, 1926; and 42,149,200 pounds for August, 1925. The monthly consumption of wool (pounds) in grease equivalent for manufacturers reporting for 1926 was as follows: January, 41,446,171; February, 40,491,996; March, 43,931,596; April, 40,093,383; May, 36,236,741; June, 38,249,220; July, 38,235,717.

Of the total quantity of wool used by manufacturers during this month of August, 1926, 17,691,740 lbs., or 50.4%, was domestic wool; and 17,398,280 lbs., or 49.6%, was foreign wool. The carpet wool was all of foreign origin. The United States produced 68.2% of the fine wool; 77.7% of the 1/2 blood; 76.9% of the 3/8 blood; 63% of the 1/4 blood and 34.8% of the low 1/4 blood.

Class and grade	Total for Aug. 1926	Total Jan. to Aug. incl. (in thousands) 1926	1925
Total	35,090,020	273,519	295,469
Domestic ...	17,691,740	116,565	135,771
Foreign	17,398,280	156,953	159,697
Combing* ...	20,472,533	153,120	148,987
Clothing* ...	5,832,423	46,369	54,257
Fine, total....	7,543,278	59,724	67,134
½-blood, total.	4,528,181	32,914	32,209
⅜-Blood, total	5,875,966	43,769	43,860
¼-blood, total.	6,110,425	46,596	45,241
Low, ¼-blood.	1,435,513	10,179	9,129
Common, total†	101,239	729	1,168
Braid, total†..	63,564	439	345
Lincoln, total‡	646,790	5,136	4,155
Carpet, total‡.	8,785,064	74,029	92,223
Tot., reduced to grease equiv.§	40,858,854	319,543	346,342
Domestic	21,633,416	147,235	170,798
Foreign	19,225,438	172,308	175,544

*Exclusive of carpet wools. †All domestic. ‡All foreign. §In computing the grease equivalent, 1 pound of scoured wool is considered equivalent to 2 pounds in the grease; and 1 pound of pulled, to 1⅔ pounds in the grease.

Pocasset Worsted Company, Inc.

Worsted Yarns

Office and Mills — Thornton, R. I.

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It is made with a quality standard according to your need.

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FOR KNITTING AND WEAVING

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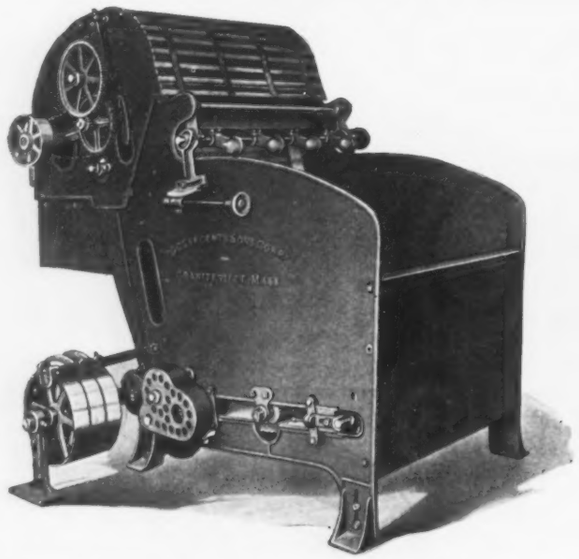

This illustration shows one of our several models used for evenly feeding wool, cotton, linters or other textile fibers in a continuous manner.

These machines are made to handle the shortest staples, such as hull fiber or linters; also the longest used in the carpet yarn industry. There is a model adapted to your work.

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If you are using one or more antiquated Automatic Feeds, or feeding some machine by hand where an Automatic Feed would give better results, let us offer you one of our modern types.

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—See also— CONSOLIDATED TEXTILE —CATALOG—

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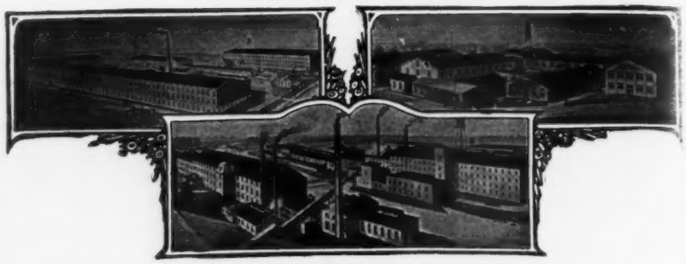

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Write for particulars of our new metallic card clothing, doing away with grinding and stripping, giving a greater output, a stronger thread, and more regularity, etc. It pays for itself in a very short time.

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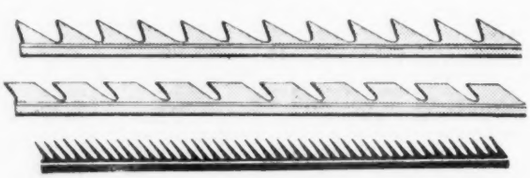

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Agents Wanted.

RAYON AND SILK YARNS

Quality Paramount in Rayon Market

Increasing Insistence on the Highest Type of Yarn—Business Is Improving

Business was reported as improving last week by most rayon sellers who state they are shipping out more yarn at the present than any time since last spring. To a considerable degree sales are still confined to immediate deliveries, but the volume rolls up just the same. Hosiery demand was stated to be unchanged, but a better response was reported from the knit underwear and the cotton goods trades. The 300 denier yarn is receiving quite a call from the Philadelphia district for draperies and damasks, a majority of this business going to the importers.

Regarding the imported yarn it is interesting to note that more and more buyers are insisting on quality in the rayon they use. For many purposes it appears that the highest type of Grade "A" domestic yarn is none too good. Several knit goods manufacturers spoken to last week, stated that they had experimented with the imported rayon but had been forced to cancel quite a percentage of their original orders as the yarn was entirely unsuited to their purpose. The fact that the larger domestic firms are now selling their yarn on cones at a 10c a pound differential helps the knitwear users who find that they cannot cone the yarn for much under twice this figure.

Figures of the Department of Commerce recently released show another small increase in the quantity of foreign yarn held in bonded warehouses. The increase is not particularly important by itself except that it possibly indicates a trend. For comparison there was held on May 31 of this year 1,892,000 pounds. By July 31 this figure had increased to 2,045,000 pounds and on Aug. 31, 2,052,000 pounds were held.

Possibilities of Manufacturing Rayon in Finland

At the annual meeting of the Association of Paper Engineers in Finland, the question of the feasibility of manufacturing rayon in Finland was brought up. Dr. John Palmen stated that there undoubtedly are possibilities for the production of rayon in Finland but that the initial costs of constructing a plant are large and for a plant capable of producing one ton per day, which would suffice for the present domestic requirements, would amount to approximately 70,000,000 Finnish markkas (markka = $0.025 in May, 1926). A factory of this capacity is the smallest that could be profitably operated. A larger plant would require still greater capital and would involve the marketing of rayon abroad which is hindered by protective duties in most of the countries to which Finland could export this product, reports Consul J. F. McGurk, Helsingfors, Finland.

British Export of Rayon-Wool Goods

VERY complete records are kept in Great Britain regarding rayon combination fabrics exported. The following table shows shipments of rayon and wool cloths for the first six months of this year:

EXPORTS FROM ENGLAND OF RAYON AND WOOL FABRICS FOR SIX MONTHS ENDED JUNE 30, 1926

Percentage by Weight of Rayon		China	United States	Australia	New Zealand	Canada	Other Countries	Total
Under 5%	Sq. yds.	21,609	14,978	11,602	2,329	6,407	93,108	150,039
	Lb.	7,113	8,408	3,457	1,006	2,349	31,491	53,869
	Value in £	3,632	2,724	1,429	462	612	16,332	25,191
5% to 10%	Sq. yds.	101,626	9,542	16,212	2,172	7,177	25,474	162,203
	Lb.	36,182	4,895	7,466	1,060	2,969	9,141	61,713
	Value in £	20,331	1,607	3,208	392	912	4,707	31,157
10% to 15%	Sq. yds.	17,606	8,758	17,152	3,300	3,685	3,798	54,299
	Lb.	6,444	4,911	8,769	1,876	1,625	1,128	24,573
	Value in £	3,802	1,736	3,781	648	843	607	11,417
15% to 20%	Sq. yds.	2,759	17,605	29,096	3,347	4,495	14,874	72,176
	Lb.	1,131	5,723	11,572	1,531	934	3,434	24,325
	Value in £	687	2,433	5,000	760	504	2,014	11,398
20% to 30%	Sq. yds.	1,672	10,921	19,151	5,546	2,262	4,121	43,679
	Lb.	597	6,556	7,826	2,543	1,160	1,698	20,380
	Value in £	437	2,273	2,846	1,009	480	716	7,761
30% to 40%	Sq. yds.	21,288	9,620	25,462	3,219	15,148	18,422	93,159
	Lb.	7,864	4,357	8,090	964	3,717	5,309	30,301
	Value in £	6,313	2,496	4,865	644	3,505	4,489	22,312
40% to 50%	Sq. yds.	2,158	1,410	20,810	4,108	19,017	14,641	62,144
	Lb.	684	348	5,389	1,201	3,976	3,370	14,968
	Value in £	507	284	4,470	965	3,149	3,079	12,454
50% to 60%	Sq. yds.	2,955	870	18,739	7,133	5,579	19,866	55,142
	Lb.	906	252	5,494	2,067	1,423	4,974	15,116
	Value in £	722	200	4,010	1,609	1,345	4,327	12,213
60% up	Sq. yds.	.....	.....	90	49	623	2,020	2,782
	Lb.	.....	.....	33	18	252	615	918
	Value in £	.....	.....	27	17	192	453	689
Total	Sq. yds.	171,673	73,704	158,314	31,203	64,342	196,393	695,611
	Lb.	60,921	35,450	58,096	12,266	18,450	61,160	246,343
	Value in £	36,431	13,753	29,636	6,506	11,542	36,724	134,592

British Enka Artificial Silk Co., Limited

At the first ordinary general meeting of the British Enka Artificial Silk Co., Ltd., held Sept. 4 at Winchester House, London, E. C., Sir Henry Strakosch, K. B. E., the chairman, said that the meeting had been called chiefly to conform to legal requirements and the company's articles, whereby a general meeting must be held before the end of 1926. It was considered desirable to fix the company's financial year to correspond with the calendar year; hence the presentation of a balance sheet covering the short period of 3½ months.

The company had acquired, after considerable investigation of other sites offered, the National Aircraft factory site at Aintree, Liverpool, the total area being 68½ acres, including buildings covering 15 acres. The directors believed that the site filled all requirements essential for rayon manufacture. The buildings were all on one floor, with ample space for extension, and were adjacent to the railway, now being connected with a siding; the supply of labor was ample, and borings had shown that the quality and quantity of water were adequate.

The necessary structural alterations were now being made, and girls were being trained in the work of sorting in readiness for starting up. The initial plant, of a capacity of 18,000 lbs. per day, was in course of construction, and it was expected to commence production from one unit of 4,500 lbs. per day capacity in October. The remaining unit of 13,500 lbs. per day capacity was expected to be ready about the end of the second quarter of 1927. The buildings having been acquired at a considerably lower cost than the estimate, part of the saving was being employed in installing some of the plant which would be needed in due course when it was decided to extend production beyond the initial 18,000 lbs. per day.

With their operations in the care of Dr. J. C. Hartogs and his highly trained technical staff, who had already had experience in manufacturing artificial silk, confidence was felt that the British company would produce an article equally as good as the present "Enka" brand, and, it was hoped, with equally satisfactory financial results.

Napon Rayon Plant Changes Completed

Officials of the Napon Rayon Corp., Clifton, N. J., have advised TEXTILE WORLD that changes and additions to their plant there, formerly operated by Cupra, Inc., have been completed, and the capacity of the plant, planned for 1500 lbs. of 150 denier, 36 filament, rayon per day will be reached shortly. It is the intention to proceed immediately with construction of a second unit of 2500 lbs. daily capacity, after which other units will be built successively until a total capacity of 12,000 lbs. at the Clifton location has been reached.

The entire cost of construction, together with adequate working capital for present operations, has been subscribed for privately and no plans have as yet been announced for the financing of the contemplated extension.

Rayon Mfg. Co's. Position

In a circular to the shareholders, the directors of the Rayon Mfg. Co., England, which was floated in June last year with a capital of £330,000 under the chairmanship of Sir Sydney M. Skinner, chairman of the John Barker & Co., announce that "the necessary alterations of the existing buildings have been completed and the viscose plant is in operation."

According to the prospectus, it was anticipated that the plants would be running to full capacity by December last, but, as explained at the statutory meeting last September, the directors decided to extend the buildings and plant. This involved the erection of an entirely new spinning mill, and the necessary building operations, the directors state, were seriously retarded by the severe weather of the winter and the shortage of skilled labor. The mill is now finished and the installa-

DOMESTIC RAYON PRICES

Denier	"A"	"B"	"C"
55	$2.55	$2.40	$2.25
65	2.45	2.30	2.15
75	2.35–2.50	2.20–2.35	2.05–2.20
80*	2.50	....	....
85	2.25	2.10	1.95
95	2.05	1.90	1.75
100	2.00 2.15	1.85–2.00	1.70–1.95
100*	2.35	....	....
110	1.95	1.80	1.65
120	1.90	1.75	1.60
125	2.00	1.85	1.70
130	1.85	1.70	1.55
140	1.75	1.60	1.45
150	1.65	1.50	1.35
150*	1.80	....	....
170	1.55	....	....
170*	1.75	....	....
175	1.60	1.45	1.30
200	1.55–1.60	1.45	1.30
200*	1.70	....	....
250	1.50	1.40	1.25
300	1.50	1.40	1.25
450	1.35–1.45	1.35	1.20
600	1.45	1.35	1.20
900	1.35	....	....

* Super extra.

CELANESE

45	$4 25
75	3 75
100	3 65
120	3 50
150	2 90
170	2 85
200	2 75
250	2 70
300	2 70

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General Silk Importing Co., Inc.

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Prepared in any Standard Form of Package

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National Spun Silk Company

INCORPORATED

MILLS: NEW BEDFORD, MASS.

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Klots Throwing Company

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Washable

For Manufacturing
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Supplied in
Hanks, dyed, single and twisted

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Spinners of Artificial Silk
ELSTERBERG, SAXONY, GERMANY

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Daily Output 50,000 lbs.

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Artificial Schappe
Artificial Straw

"CHATILAINE"
Artificial Wool
Artificial Horsehair

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Cops	Single
Cones	Multiple
Tubes	Plain Twists
Skeins	Novelty Twists
Bobbins	Dyed or Natural

VisTex Mills, Inc.

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DYED & NATURAL **RAYON** RAW & THROWN
ON COPS-CONES-SPOOLS
Prompt-Efficient and Reliable
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Spunrayarn and Rayon-Worsted Blends

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CANADIAN REPRESENTATIVES: WM. B. STEWART & SONS, LTD., TORONTO-MONTREAL

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Immediate delivery of standard sizes and twists in colors guaranteed.

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Put up in proper form for
WEAVING
KNITTING

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200 GREENE ST. NEW YORK

"PECO RAYON"

A Viscose fiber distinguished by its delicate sheen and unexcelled wearing qualities.

"PECO GLOSSINE"

A Cuprammonium fiber of supreme fineness and great elasticity.

Pennrich & Company, Inc.
29 Broadway, New York, N. Y.

Rayon and Silk Yarns—Continued

tion of the spinning plant is rapidly approaching completion. The directors express confidence that "in the very near future the company will be producing artificial silk yarn of the very highest quality."

Report of Dutch "Enka" Co.

Recent annual reports of several Dutch organizations show satisfactory results. The report of the Nederlandsche Kunstzije Fabriek (Enka) shows a gross profit of 5,995,289 guilders for 1925, (6,273,977 guilders for 1924) of which 1,294,901 guilders will be used for depreciation and 1,263,887 guilders for reserve; the dividend of 25% for the year remains unchanged. It is interesting to note that the director of this enterprise has recently asserted that their present production amounts to 6,500,000 lbs. per year, which represents a considerable increase over previous years, states Assistant Trade Commissioner P. E. McKenny, The Hague.

Spun Silk Active

Sellers Report Business Active and Prices Firmer

There was a firmer trend to prices in the spun silk market last week although sellers have not yet actually advanced their quotations. Business was reported as much more active than in recent weeks with some rather substantial orders booked. Singles were bought on the strength of the continued good demand for satins. Ply yarns also noted a good inquiry. Some of the larger manufacturers apparently think better of the broad silk numbers than their talk of late would indicate. Prices are as follows:

60—2	$5.75	30—2	$5.25
50—2	5.60	20—2	5.00
40—2	5.45	60—1	4.65

Thrown Silk Quieter

Crepe Yarns in Smaller Demand but Hosiery Sales Active

Sales of thrown silk to the broadsilk trade showed a small slackening last week. There had been considerable interest in four thread crepe shown right along, but last week this had quieted down. Three thread continued to be bought in good quantity and at the same time two thread showed signs of life following a long period of inactivity. The higher prices seemed to have been the real reason behind the withdrawal of buyers. The fact that many mills are now covered for several weeks also contributed to the lessened interest.

Hosiery sales maintained a good pace and as a matter of fact many believe that the hosiery buying has been the prime factor in the advance. In many cases buyers forced close prices but sales continued notwithstanding.

Prices are as follows:

(60 days basis)

Japan Organzine 2 thd Grand Double Extra in skeins	$7.85
Japan Tram 3 thd in skeins	6.95
Japan Tram 5 thd on cones	6.90
Japan Crepe 3 thd on bobbins 65 turns	7.65
Japan Crepe 2 thd XXA on bobbins 70 turns	8.20
Canton Crepe N S 14/16 3 thd on bobbins	5.90
Tussah Tram 2 end on cops	3.60

Raw Silk Firm

High-Grade White Silk, Size 13/15, Heavily Bought

Broadsilk and hosiery manufacturers continued to operate on a fairly heavy scale last week. Prices were firm as a consequence although at the end a somewhat disappointing report of the Silk Association as to the September consumption figures resulted in an easier tone. High grade 13/15 silk attracted the greatest amount of the buying with some mills operating for a month or two in advance. Discounts continue large on the 20/22 size because of the fact that hosiery buying together with silk for georgettes converges on the 13/15's.

Canton silk dropped further in New York in the first half of the week. Silver exchange permitted offers for shipment on a L/C basis slightly under $4.50. At least one and possibly two houses, however, accepted a large volume of business at $4.40 New York terms. Manufacturers and dealers took all the silk offered at this price promptly as it was under actual cost. Shanghai silks rallied later with the recovery in the price of silver.

(90 days basis)

Japan Filature, Grand Double Extra	13/15	$6 70
Japan Filature, Crack Double Extra	13/15	6 60
Japan Filature, Double Extra	13/15	6 50
Japan Filature, Best X	13/15	6 40
Japan Filature, X	13/15	6 25
Japan Filature, Best No. 1/X	13/15	6 22½
Canton Filature, New Style	14/16	4 60
Canton Filature, New Style	20/22	4 40
Shanghai Steam Filature, Grand Double Extra		6 80
Shanghai Steam Filature, Extra A		6 40
Shanghai Steam Filature, Extra B		6 30
Tussah Filature, 8 cocoon		3 10

SUMMARY OF SILK CABLES

Best No. 1/X Yokohama	1610 Yen
Exchange at 3 m/s	49¼
Cost C. I. F. New York	$6.28

Prices in Yokohama ended a week of small fluctuations on an unchanged basis. Opening at 1610 Yen, quotations declined to 1600 Yen at which level 600 bales were taken on Oct. 1 with another 1,000 bales taken on Oct. 2. Anticipating a favorable consumption figure for September the market strengthened, 2,500 bales being sold on Oct. 3 at a 20 Yen advance. At this level buying interest slackened and prices again moved off 10 Yen. Transactions for the full week amounted to 6,400 bales in the open market. The Canton market was slightly higher in a week that was marked by erratic fluctuation in silver exchange. Steam Filatures in Shanghai were also higher.

Manufacturers of
HOSIERY TRAM

Artificial Silk on Cones

Artificial Silk twisted with Raw Silk

Artificial Silk twisted with Worsted

VAN STRAATEN AND HAVEY, Inc.

Artificial Silk twisted with Cotton

Mercerized Cotton twisted with Raw Silk

Sample Cones sent on Request

137 Berkley St., Wayne Junction
PHILADELPHIA

New York Office: 389 Fifth Ave.
A. Rosenstrauch, Representative

Boston Representatives:
Perkins & Boland, Inc., 80 Federal St. Boston

Pennsylvania and Southern Representative:
John S. Bowes, 137 Berkley St., Philadelphia

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(Bombyx Mori)

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Spun Silk Yarns

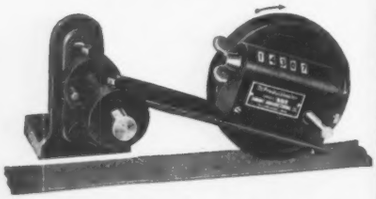
The natural product of the silkworm plus the skill of Champlain spinners

CHAMPLAIN SILK MILLS

25 Madison Avenue, New York

Mills: Whitehall, N. Y., Glens Falls, N. Y.

Counters That Are Built Better!



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Count or measure yards, or picks; 57 standard models to choose from. Write for the complete Productimeter Catalog and tell us which application you are interested in.

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"Wear American-Made Fabrics"

Mr. I Kno-Wool Says:

"Consider the Woolies of the Field, they toil not, neither do they spin,— and, are therefore Shorn and Slaughtered."

B. & G. Better Grade Reworked Wool is the result of constant toil to keep up the spinning qualities necessary for its use in Fine or Coarse fabrics.

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REWORKED WOOLS
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Any size or kind. We have the most complete facilities in the Middle West.

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Machine for rapid and Economical Method of Attaching Rider tickets to Hosiery or other Garments.
Uses pointed staples, cannot tear the finest fabric
Send for Catalogue
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OUR SPECIALTY: We grade new woolen clippings ready for the picker. Write for samples and prices. Correspondence solicited.

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WOOLEN RAGS
REWORKED WOOL
Custom Carbonizing and Picking
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HAZARDVILLE, CONN.
Reworked Wool, Wool Waste
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For binding Cotton and Woolen Bed Blankets
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Water softeners for throwsters, scourers, bleachers, dyers and finishers
LIME & SODA Softeners
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American Water Softener Co.
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WOOL

White Woolen Rags Feature Substitutes

Softs and Knits Hold Their Gain —Blue Serge Advances—Rag Imports and Exports

The woolen rag market is slowly moving to a higher level under the influence of mills purchasing white and light-colored materials at better prices. The representative of one large house stated that accumulations of white softs had been practically cleaned out and that only additional purchases of mixed softs followed by grading operations could bring about a further available supply. White softs are on a 41-42c basis. Some graders separate the knits from the white serges and flannels selling the same separately and 45c has been paid by a mill for white knits, the seller stating that even higher prices would be asked for good material. The entire market is stronger with the best fine light merino 18-19c, light hoods very firm at 25c. In blue serges which up to recently have been quite neglected better buying is taking place a mill paying 8½c for a good-sized quantity and 9c is considered to be the likely price for further selling.

For the first seven months of this year imports of woolen rags into the United States totalled 9,788,000 pounds at an average value of 28c per pound while exports during the same period were 6,180,000 pounds valued at 8c per pound. The biennial census of manufacturers covering reworked wool establishments just issued estimates the production of reworked materials for the year 1925 at 67,543,000 pounds. The gain in value of this production as compared with 1923 was approximately 25%.

The position of the various grades of white worsted threads and of fine white woolen threads is considered quite strong. The output of these materials is very small, mill superintendents everywhere paying great attention to the prevention of wastes at this point, the last process in the spinning industry proper. Consumption at this time is not far from equal to output. There are no large stocks anywhere, the regular imports from Bradford and the Continent not being in large volume owing to stronger prices in those centers of manufacturing.

Good wastes continue their steady upward movement in Bradford. Fine drawing lap has advanced another penny and is now 42 pence; drawing, roving and spinning has risen from 37 to 38 pence; 3/8s blood are up one penny per pound and 1/4 bloods show a similar rise. Colored drawing lap has advanced from 34 to 35 pence.

"Wool Shoddy" Industry Expands

Produces Approximately 20% of Total Raw Material Consumed—Large Imports of High Grade Woolen Rags

BOSTON.

THE magnitude of the general industry covering the collection and grading of woolen rags, imports and exports of the same, and the conversion of these materials into "wool shoddy" or reworked wool is imperfectly known even by the men in the industry and to wool merchants and sellers of mill wastes it is looked upon rather patronizingly as a junkman's proposition. It is difficult to give more than an approximate view of the situation inasmuch as the Government bureaus beyond collecting import and export figures and conducting a biennial census do little else.

There are at this time approximately 70 establishments in the United States devoted to picking, carbonizing, dyeing and carding old woolen rags. Many woolen mills, however, buy large quantities of rags converting the same on their own premises and these mills are also the largest purchasers of clips which are the new materials from various cutting-up establishments of the country. It might seem a fair estimate that the woolen, knitting, and felt mills of the country convert old rags to an amount equal to the entire output of the "wool shoddy" industry proper.

The production of recovered wools in 1925 was 67,000,000 lbs. and if the mills doing their own converting produced say 53,000,000 lbs. this gives a total of 120,000,000 lbs. as representing the amount of reworked materials consumed by the woolen branch of the industry. Consumption of virgin wools during the year 1925 was 526,000,000 grease pounds for concerns reporting or approximately 657,000,000 lbs. for the country as a whole. If the average shrinkage is estimated 40% the consumption of clean wool would be 394,000,000 lbs. for both branches of the industry with the addition of 120,000,000 lbs. of reworked material by the woolen branch.

Wool and Substitute Quotations

(Corrected at close of business on Wednesday)

WOOL

Ohio, Pennsylvania and West Virginia

Fine delaine	.45—.46
Fine clothing	.40—.41
½ blood	.44—.45
⅜ blood	.43—.44
¼ blood	.43—.44

California (Scoured Basis)

Northern, 12 mo.	1.03—1.08
Southern, 12 mo.	.85—.90

Texas (Scoured Basis)

Fine 12 mo.	1.10—1.12
Fine 8 mo.	.90—.95

Pulled—Eastern (Scoured Basis)

A.A.	1.10—1.12
A-Super	.93—.95
B-Super	.83—.85
C-Super	.65—.68

Montana, Idaho and Wyoming (Scoured Basis)

Staple fine	1.12—1.15
Do. ¼ bld.	1.00—1.05
Fine & fine medium	.98—1.00
⅜ blood	.91—.93
¼ blood	.81—.83

Mohair—Domestic

Best combing	.75—.80
Best carding	.65—.70

Mohair—Foreign (In Bond)

Turkey Fair av.	.40—.43
Cape Firsts	.38—.40

Foreign Clothing and Combing (In Bond)

Scoured Basis—Cape:	
Super 12 months	.95—1.00
Super 10-12 months	.88—.92
Australian:	
70s	1.05—1.12
64s	.95—.97
58—60s	.85—.87
Grease Basis:	
Montevideo:	
58—60s	42—43
56s	39—40
50s	36—37
Buenos Aires:	
48, 40—44s	.28—.29
58, 36—40s	.26—.27

Foreign Carpet (Grease Basis in Bond)

China: Combing	.30—.32
Szechuen ass't	.28—.29
Cordova	.22—.24
Scotch Black Face	.24—.26
East India: Kandahar	.35—.38
Vican'r	.40—.46
Joria	.39—.45
Aleppo	.36—.38
Iceland, class 1	.37—.38
Iceland, class 2	.33—.35

SUBSTITUTES

Wool Waste

Lap—	
Fine White	1.12—1.15
Fine colored	.88—.90
Thread White Worsted—	
Fine	.83—.87
½ blood	.78—.82
⅜s blood	.68—.72
¼ blood	.50—.55
Thread Colored Worsted—	
Fine	.41—.43
½ blood	.35—.38
⅜s blood	.33—.35
¼ blood	.30—.32
Card—	
Fine white	.50—.55
Medium white	.38—.42

Old Woolen Rags

Merinos—	
Coarse light	8 — 8½
Fine light	18 —19
Fine dark	6 — 6½
Serges—	
Blue	8½— 9
Black	6½— 7
Red	15 —16
Knit—	
White	44 —46
Red	14 —15
Light Hoods	25 —26
Worsteds—	
Light	9 — 9½
Black	8½— 9
Blue	8½— 9

Although the complaint is heard from time to time both from fiber manufacturers and rag graders that the general business is poor yet as a matter of fact the industry as a whole for the last five or six years has shown steady improvement indicated by increasing production of recovered materials year by year. The Department of Commerce biennial census figures covering "wool shoddy" for the years 1921-1925 given on page 102 show the steady expansion made. The following table gives the situation in brief:

	1921	1923	1925
Establishments	53	59	67
Production (lbs.)	27,000,000	55,000,000	67,000,000

The consumption of foreign rags has been gaining steadily in the last four years. Mill demand has been so largely upon white and light colored materials of good length of fiber that domestic graders apparently have not been able to meet this call from the mills. The Fordney-Macomber tariff bill which went into effect Sept. 22, 1922 placed a duty of 7½c per pound on imported rags which has practically had no effect in preventing growing imports. The general foreign business in rags is featured by the importing of high-priced rags and the exporting of low-priced rags. The following table shows imports and exports in pounds for the years named:

	Imports	Exports
1921	2,756,000	1,863,000
1923	11,397,000	10,988,000
1925	23,382,000	8,380,000

Imports of woolen rags for first seven months of this year totalled 9,788,000 lbs. while exports for the same period were 6,180,000 lbs.

Wool Values Stationary

Stable Market Seen—Texas Mohair Brings Good Prices

BOSTON.—The wool market on Summer Street seems to have reached the limit as to values. There has been fairly good mill purchasing over several weeks but the net advance of the market has been relatively small. Ohio delaine and staple territory are just about where they were a month ago. The medium wools are a little higher. The market is quite stable and this is a very desirable situation. There is less opposition on the part of mills to price level now well established which for territories is around $1.15 for fine, $1.05 for ½ blood, 93c for ⅜s blood and 83c for ¼ blood. Foreign wools in bond exhibit a strong upward tendency in fine merinos. Not registering advances on the best wools holders are asking for better prices for wools that are slightly below the best. The market as a whole is still about 10% lower than it was a year ago at this time.

In keeping with increased activity in wool machinery, August wool consumption showed larger utilization ris-

Carbonizers and Neutralizers
of
Scoured Wools and Noils
by the
Dry Gas Process

Produces a wool and noil of attractive feel, uniform color, less shrinkage and greater fibre value.

GORDON and GORDON
P. O. Box 41 **Hazardville, Conn.**

WOOLENS COTTONS

SJÖSTRÖM Patent Cooling and Conditioning Machines

A positive necessity for every textile manufacturer

MANUFACTURERS MACHINE CO.
North Andover,
WORSTEDS **Mass.** SILKS
See also CONSOLIDATED TEXTILE CATALOG

Line at Side Actual Size

AT LAST A Real Moth Destroyer and Preventative

EDGAR A. MURRAY'S MOTH DOOM sprayed directly on Wool, Yarns, Finished Cloth, Rugs, etc., not only destroys all worms and larvae, but leaves a preventative against future attack.
Will not stain the finest fabric.
Guaranteed ABSOLUTELY.

NO RIDDANCE — NO PAY

For full particulars apply to

HAINSWORTH SUPPLY COMPANY
ROACH DOOM **2411 N. 6th St., Phila., Pa.** RAT DOOM

See also CONSOLIDATED TEXTILE CATALOG

Everything for Textile Printers
And for Bleachers, Dyers and Finishers
Engraving Machinery and Supplies
Chas. A. Johnson & Co., 25 Walker Street, New York City
Branch Office: 15 Pine Street, Providence, R. I.

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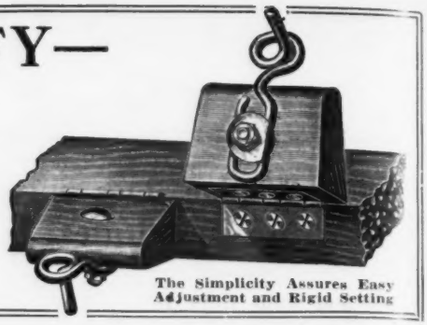
The Palmer Improved Adjustable Thread Guides
on your Spinning and Twisting Frames.

The I. E. Palmer Co.
Middletown, Conn.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The Blake Automatic Selvage Opener

in your plant
BECAUSE it will save money, time and trouble.

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BOSTON 255 Atlantic Ave. MASS.

Important Improvement in Worsted Spinning

Dustproof and Self-Lubricating Spinning Tube

saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, *and most important of all,* makes PERFECT YARN.

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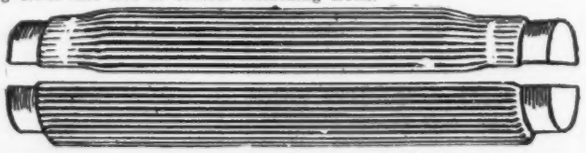
Successors to BAMFORD & SMITH CO.
STEEL CAPS, SPINDLES, TUBES AND FLYERS—Manufactured and Repaired.

SPINNING, SPEEDER *and* MULE ROLLS
RENECKED, REFLUTED AND HONED
NEW FLUTED ROLLS OF ANY SIZE MADE TO ORDER
George A. Bates Flute Raising Machine patented June 25, 1907; for raising worn out Drawing Rolls like this or comber Detaching Rolls.

WORN ROLLS MADE NEW



Returns the Rolls with worn ends of delivery to the original size of new roll. Guaranteed not to change draft of roll.
Speeder Spindles, Flyers and Pressers repaired or new ones made to order.
G. A. BATES & SON **876 Broadway, Fall River, Mass.**

AUTOMATIC LOOMS

For Cotton, Silk, Woolen and Worsted Weaves of latest design, are built by

Hopedale Manufacturing Company at MILFORD, MASS.

JONAS NORTHROP, *President* G. O. DRAPER, *Vice-President*
C. H. DRAPER, *Treasurer* RANDOLPH CROMPTON, *Vice-Pres.*
F. E. NORCROSS, *Secretary*
See also CONSOLIDATED TEXTILE CATALOG

Dixon's Patent Reversible and Locking in Back Saddle with New Oiling Device, three Saddles in one, also Dixon's Patent Round Head Stirrup.

Send for samples to
DIXON LUBRICATING SADDLE CO.
Bristol, R. I.

Wool—Continued

ing from 38,236,000 grease pounds in July to 40,859,000 lbs. a gain of 6.8%. The New England division which consumed 53.7% in July declined to 49.2% in August. The actual increase in grease pounds for August was 1,623,000 lbs. but the carpet wool consumption increased from 7,090,000 lbs. in July to 8,785,000 lbs. in August a gain of 1,695,000 lbs making it quite evident that the increased consumption for the month for concerns reporting, approximately 80% of the industry, was entirely in carpet wools.

In wools for combing purposes ½ blood grades showed an increased consumption of 609,000 lbs. all of domestic origin. In other grades with the exception of fine, less foreign and more domestic wool featured manufacturing operations.

The situation in mohair is taking on new life with the appearance of the new fall clip in Texas large quantities of which have been purchased recently by Summer Street houses at rather higher prices than might have been anticipated considering the slow market that has prevailed for this fiber over a considerable period and considering further the fact that there is probably more foreign hair in bond at this time than for several years. Approximately 700,000 lbs. have been purchased with actual values difficult to obtain possibly 60-65c for fully grown hair and 78-80c for kid hair. Some of the foreign hair is moving out of bond the Turkey fair average at a slightly higher price than the Cape firsts. The Turkey hair has cost 65c to take it out of bond and some holders are asking 68c. There is however no scarcity of hair in Turkey, but disturbed conditions in that part of the world probably prevent any large export.

Boston Wool Receipts

Receipts of domestic and foreign wools at Boston, also imports at Philadelphia and New York for the week ended Oct. 2, based upon data compiled by the Market News Service of Bureau of Agricultural Economics, Department of Agriculture, are as follows, in lbs.:

	Week Ended Oct. 2	1926	1925
Domestic	3,058,000	142,000,000	115,420,000
Foreign	1,057,000	151,547,000	130,012,000
Total	4,115,000	293,547,000	245,432,000
IMPORTS AT PRINCIPAL PORTS			
Boston	1,057,000	151,547,000	130,012,000
Philadelphia ..	1,018,000	37,617,000	69,998,000
New York.....	1,577,000	46,664,000	52,263,000
Total	3,652,000	235,828,000	252,273,000

LITTLE FALLS, N. Y. The Phoenix Mills, Inc. have filed notice of reduction in capital from $1,800,000 to $1,139,600.

TORONTO, ONT., CANADA. The Royal Silk & Woolen Co., Ltd., Toronto, has been granted an Ontario charter with power to manufacture and deal in textile fabrics of all kinds. Among the incorporators are M. J. Weiss, L. C. Weiss and Jacob E. Broudy, of Toronto. The authorized capital is $40,000.

Worsted Wools Active

Prices of Fleece and Territory Strengthening—Good Demand

PHILADELPHIA.—The market has made a decided movement in the dealers' favor. Advances have been reported during recent weeks in pulled wools and noils, which have increased approximately 10% from their low, while fleece and territory wools remained stabilized and unchanged, although they too acquired during this period a firmer trend. This week fleece and territory wools have followed a similar tendency and prices have been advanced, this being more noticeable in fleece than in territory. Sales of bright quarter blood fleece have been made at 44c and spinners have offered as high as 44½c on other lots, or a cent to a cent and a half above previous price of 43c.

Worsted Mills Buying

Worsted wools have been moving more actively in all grades with the exception of fine and dealers are inclined to raise prices after selling fair sized lines. Bright quarter blood fleece wools are reported in small supply among local dealers, those possessing fair sized lines of this grade are holding at 45c and are not anxious to sell large lots at this figure. They report a fair amount of these wools remaining in the West but growers there are asking 40c to 41c. Dealers are unable to replenish stocks at this level and sell here at a profit.

Noils in Good Demand

Trading in pulled wools is not as active as two or three weeks ago when the spurt in demand was at its height, but trading continues fair to good with no change in prices. Good B supers are selling for 88c while average wools of this grade are movable at 85c; C supers sell for 75c and higher. Noils have been particularly active and top prices have been paid, quarters bringing 57c to 60c, three-eighths from 65c to 68c and fine from 85c to 87c. Medium noils are up seven cents from their low point, sales having been made this week at 57c comparing with less than 50c paid early in July. Carpet wools are active and prices strong. Sales of Szechuen assortment were reported at 28c and China combing at 30c, both being two cents above previous selling prices.

Brodsky Bros., Inc., to Move

Brodsky Bros., Inc., wool pullers, will move in the near future from their present plant at Ontario & Richmond Sts., Philadelphia, to new quarters located at Peltz St., and Schuylkill River.

Zayotti Moves Office

A. H. Zayotti & Co., Inc., have moved their main office, formerly located at S. E. corner of Front and Walnut streets, Philadelphia, to 80th street and Island road, continuing their branch offices in Boston and Chicago at the same addresses as heretofore.

This bobbin was wound of very heavy yarn to show the detail of the wind. The same sort of work is done on single cotton, wool, worsted, etc.

LAZENBY FILLING WINDERS accomplish the results which make them so valuable to so many mills.

The yarn is wound from beginning to end under even tension, and the cross-wind lays the yarn so that it can not possibly sluff off. Any tendency of the yarn to wrap around the bobbin barrel and draw selvedges is eliminated, because the yarn throws *from* the bobbin.

All of the Filling is uniform. Each spindle is entirely independent and has its own traverse mechanism. The whole machine is so simply constructed that the little adjustment and repair it requires is accomplished with negligible effort.

LAZENBY Wound Filling is a means to an end. It is seldom an investigation fails to demonstrate savings far in excess of an adequate return on their cost.

A weaving test of Filling wound of your yarn to fit your shuttle will show you at once the advantage of winding the LAZENBY way.

Lazenby Wound Cops are known all over the world as the best cops, because they are produced at the lowest cost and contain as much yarn as can possibly be put into the shuttle. If you don't weave them.--You should.

F. A. LAZENBY & CO.

Incorporated

416 Key Highway

BALTIMORE

MARYLAND

Has your Filling been Testwound?

See also CONSOLIDATED TEXTILE CATALOG

Canadian Representative
C. M. CUDLIP
35 Robinson St.,
HAMILTON, ONTARIO

NATIONAL SOLANTINE ORANGE G

AN addition to our line of Fast-to-light Direct Dyes, yielding pure orange shades characterized by fastness to light, washing, perspiration, chlorine, organic acids, etc.

Of excellent solubility, is but little affected by metals, thereby making it well suited for use in all types of dyeing machines.

Suitable for color discharge work.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

BOSTON — PHILADELPHIA — SAN FRANCISCO
PROVIDENCE — CHICAGO — MONTREAL
HARTFORD — CHARLOTTE — TORONTO

NATIONAL DYES

NATIONAL N DYES

WHAT

DU PONT DYESTUFFS

MEAN TO YOU

1. **A chemical background of 124 years.**
2. **Unexcelled manufacturing facilities.**
3. **Constant chemical control during production.**
4. **Continual improvements through persistent research.**
5. **The greatest of care in standardization.**
6. **Conveniently located branch warehouses.**
7. **Technical assistance on application problems.**
8. **Contact with an organization imbued with the spirit of service.**

E. I. du Pont de Nemours & Co., Inc.

Dyestuffs Department

WILMINGTON DELAWARE

Branch Offices

New York — Philadelphia — Chicago
Providence — Charlotte — Boston
San Francisco

See also CONSOLIDATED TEXTILE CATALOG

DYESTUFFS AND CHEMICALS

Chemists to Hold Two-Day Convention at Charlotte

A two-day convention of the American Association of Textile Chemists and Colorists will be held at the Hotel Charlotte, Charlotte, N. C., beginning December 3.

About 200 prominent chemists from states lying between Massachusetts and Texas, are expected to attend the meeting. John L. Dabbs, of Charlotte, southern agent for the E. I. du Pont de Nemours Co., is one of the committee arranging for the convention. The program will not be completed before November 1, it was said.

Approximately a score of Charlotte men are expected to go to Spartanburg, S. C., October 16 to attend the meeting of the southern section of the American Association of Textile Chemists and Colorists, mentioned in these columns last week.

School Children Have Been Picking Cotton in Alabama

GADSDEN, ALA.—School boys and girls have been answering the distress calls of cotton planters and have been spending every spare hour in the fields, helping out in an emergency and making a decent wage at the same time. Many bales that might have been lost to the cottongrowers have already been picked out by the boys of Snead Academy at Boaz.

The Use of Color in Selling

(*Continued from page 96*)

various beautiful effects are in their infancy.

The Use of Color in Selling

There is nothing absolute in color and in that lies its great fascination. This formula might be given: "If your color scheme does not register, try vibration." Try it on the front gate, the door. Already it appears on many advertising folders and on some painted furniture. I have before me a beautiful colored booklet advertising the Canadian Pacific cruises of 1925-1926. How could the amazing experience of a trip around the world be symbolized on one cover? They have done it by a futuristic vibratory arrangement of colors, prismatic in effect, into which glimpses of exotic scenes are introduced. This beautiful booklet is one of the finest examples of futuristic and vibratory color.

Suggestions for Advertisers

When I design a play, I first read the play and pick out its greatest movement. I do not begin at the beginning. I begin at the climax. While my mind is fresh and clear, I take out this great movement and then I pick out the outstanding figure and make her stand out. I carefully pick colors which command attention and I balance them so as to give an adequate shock to the eye.

My remaining effort with that scene is to see that nothing on the stage can interfere with my leading lady. I allow the rest of the scenê to be interesting as background and as a support. The same rule of procedure would work out well in designing an advertising booklet, a house, a garden, a dress, a piece of jewelry, wall paper or any other designable thing.

If you can get your great color moment, your center of interest, all else will fall into relation. Many schemes are ineffectual just because they are good, mediocre balanced effects without definite dynamic kick to get attention. The getting of the central thought is the biggest battle. The second battle is to allow nothing to interfere with one's effect.

The theory that a good color scheme balances on gray, leaves me cold. God does not seem to be at all convinced about balancing on gray. Stir up any beloved color scheme and you will seldom get a perfect gray. An eyed peacock feature is a marvelous split-supplementary harmony. Last summer I was asked to make a great peacock costume for a social revel. I discovered that painting the features with blue-green and yellow-orange gave the florescent bronze effect of the feathers themselves.

I also discovered that any scarf or small article of wearing apparel which I worked out on this scheme met with instant favor. Mischievous ideas creep into human thought and are difficult to eradicate. The peacock feature is beloved of the Chinese, the Persians and the East Indians, yet we are deprived of much of this beauty by a silly notion which is passed like gossip from one to another.

The infinite possibilities in color are what make the subject so fascinating. The Greeks in the Ionic period probably thought that they had exhausted the possibilities of artistic expression, whereas they had hardly introduced the subject. Each generation is inclined to think that the last word has been said and that decadence has begun at last. Right then is the beginning of failure, for we have but scratched the surface of the possibilities of beatuy. Before I die, I expect to see fabrics as beautiful as the petals of flowers, holding an actual iridescence of color.

The miracle of the coal tar dye has not yet been finally unfolded. Dyes can be like imprisoned light with the florescent quality of rainbows. Dyeing and lighting and the production

Miscellaneous Chemicals

Alumina Sulp. com....	1 40 — 1 45
Iron Free	2 00 — 2 05
Alum. Ammonia Lmp..	3¾ — 3½
Potash, Lump	2¾ — 3½
Ammoniac, Sal. white gr., dom.	5½ — 7
Bleach powder, per 100 lb. works, carloads..	2 00 — 2 40
Blue Stone	5 — ...
Calcium Arsenate	7½ — 9½
Chlorine, Liq. Cylinders	5½ — 9
Tanks	4 — 4¼
Copperas, ton	12 00 — 18 00
Cream of Tartar.....	21 — 21½
Epsom Salts, 100 lb...	1 30 — 2 00
Formaldehyde Spot....	9 — 9½
Glauber Salts, 100 lb...	80 — 1 20
Glycerine (C. P.) bbls.	30 — 32
Cans	31½ — 33½
Yellow Crude	30 — 32
Hydrosulphite Conc....	23 — 25
Lead—Brown acetate..	13 — 13½
White (crystals)	14 — 14½
Lime, acetate, 100 lb...	3 25 — ...
Potassium—Bichromate	8¼ — 8½
Chlorate crystals ...	8½ — 9
Permangan. tech.....	14½ — 15
Sodium acetate	4½ — 5
Bichromate	6½ — 6¾
Bisulphite, 35%.....	1 50 — 1 75
Nitrite	9 — 9¼
Phosphate	3¼ — 3½
Prussiate, yellow.....	10 — 10¼
Sulphite, 60% fused.	3¾ — 4
30% crystals	2½ — ...
Tartar emetic, tech....	29 — 31½
Tin—Crystals	41½ — 42
Bichloride, 50 deg....	17 — 17¼
Oxide, bbls.	64 — 66
Zinc Dust	9½ — 10

Acids

Acetic, 28% per 100 lb.	3 25 — 3 50
Citric crystals	45 — ...
Formic, 90%.....	10½ — 11
Lactic, 22%.....	5½ — 7
Muriatic, 18 deg. per 100 lb. in tank cars.	85 — 95
Nitric, 36@42 deg. per 100 lb.....	5 00 — 6 75
Oxalic	10¾ — 11½
Sulphuric, 66 deg. per ton in tank cars.....	15 00 — 16 00
Tartaric	29 — 29½

Alkalies

Ammonia, aqua, 26 deg.	3½ — 4
Borax, Crys. bbls.....	5¼ — ...
Potash, carbonate, 80–85%	6 — 6¼
Caustic, 88–92%.....	7⅛ — 7⅝
Soda Ash, 58% light...	1 43 — 2 44
Contract, 100 lb.....	1 25 — 1 63
Bicarb, per 100 lbs...	1 90 — 2 25
Caustic, 76% per 100 lb.	3 20 — 3 90
Contract, 100 lb.....	3 10 — ...
Sal. 100 lb.....	1 10 — 1 25

Natural Dyes and Tannins

Fustic: Crystals.....	20 — 22
Liquid, 51 deg.....	10 — 12
Gambier, liquid	12½ — ...
Hematine, crystals	14 — 20
Hypernic Ext.—51 deg.	12 — 16
Indigo—Madras	1 30 — ...
Logwood Extract, liq. 51 deg.....	8 — 10
Crystals	16 — 20
Osage Orange, Extract, 51 deg.	7 — 7¼
Quercitron extract, 51 deg.	6 — 7
Sumac, Ext. dom., ref., 51 deg.....	6½ — 7
Extract, stainless ...	10 — ...
Tannic Acid, tech.....	35 — 40

Dyestuffs and Intermediaries

Alpha Naphthol, ref....	90 — 95
Crude	60 — 65
Alpha Naphthylamine..	35 — 37
Aniline Oil	15 — 17
Salt	22 — 24
Beta Naphthol, sublimed	55 — 60
Technical	22 — 24
Dimethylaniline	30 — 32
Metaphenylene Diamine	90 — 95
Paranitraniline	48 — 50

Oils and Soaps

Castor Oil, No. 3.....	12 — 13
Olive Oil, denatured, gal.	1 20 — ...
Foots	8½ — 9
Red Oil, lb.....	9 — 10½
Stearic Acid, double presses	13 — 13½
Turkey Red Oil, 50%..	10 — 12

Adhesive and Sizing Materials

Albumen, blood domestic	50 — 55
Dextrine-Potato	7½ — 8
Corn, bags, 100 lb....	4 07 — 4 12
Do. bbls, 100 lb.....	4 34 — 4 39
Gum, British, 100 lb...	4 37 — ...
Do. bbls.....	4 64 — ...
Sago flour.....	3½ — 4
Starch, corn, 100 lb....	3 32 — 3 42
Do. bbls.....	3 59 — 3 69
Do. thin boiling, bags, 100 lb.....	3 92 — 4 02
Do. bbls.....	4 19 — 4 29
Potato	6½ — ...
Rice	9 — 9½
Wheat	6½ — 7
Tapioca flour	3½ — 5½

Coal Tar Dyes

Direct Colors—	
Black (H-acid).....	28 — 35
Black Columbia FF..	50 — 60
Blue, 2 B.....	24 — 32
Blue, sky ordinary...	60 — 80
Blue, 2 GL.....	2 00 — 2 50
Blue, 4 GL.....	2 25 — ...
Blue Sky, FF.....	95 — 1 50
Blue, Fast, RL.....	1 90 — ...
Blue, Solamine.....	2 00 — ...
Benzo Azurine.....	75 — 80
Brown, C.....	40 — 60
Brown, M.....	70 — 90
Brown, Congo G.....	85 — ...
Brown, Congo R.....	80 — ...
Green, B.....	60 — 90
Green G.....	65 — 90
Orange, Congo.....	60 — ...
Orange, Fast S.....	1 70 — ...
Red, Fast F.....	80 — 90
Red, Congo.....	40 — 50
Benzo Purpurine, 4 B.	40 — 60
Benzo Purpurine 10 B.....	1 25 — 1 50
Scarlet, 4 BA.....	1 50 — ...
Scarlet, 4 BS	2 10 — ...
Scarlet, 8 BS	2 15 — ...
Scarlet, Diamine B..	1 65 — ...
Violet N.....	1 10 — 1 20
Yellow chrysophenine	60 — 1 30
Yellow, Stillbene.....	90 — 95
Developing Colors—	
Black, BH.....	40 — 60
Black Zambesi.....	.... — 90
Bordeaux, Dev.....	2 50 — ...
Orange, developed....	2 50 — ...
Primuline	1 00 — 1 15
Red, Dev. 7 BL.....	2 50 — ...
Scarlet, Dev.....	2 50 — ...
Sulphur Colors—	
Black	14 — 24
Blue, cadet.....	90 — 95
Blue, navy.....	50 — 60
Brown	20 — 60
Green	55 — 1 50
Green, olive.....	25 — 50
Yellow	45 — 50
Basic Colors—	
Auramine	90 — 1 00
Bismark Brown.....	50 — 60
Chrysoidine	40 — 65
Fuschine crystals.....	1 50 — 1 75
Malachite green.....	1 50 — ...
Methylene blue.....	1 10 — 1 25
Methyl violet.....	80 — 1 15
Rhodamine B. extra cone	5 50 — 6 00
Safranine	1 45 — 1 60
Victoria Blue B.....	3 10 — ...
Acid Colors—	
Naphthol blue blk.....	35 — 60
Naphth lamine black 4 B.....	50 — 55
Alizarine saphirol....	2 75 — 4 00
Alkali blue.....	3 25 — 3 50
Indigotine	75 — 1 30
Induline (water soluable)	75 — 80
Soluble Blue.....	3 00 — 3 75
Sulphoneyanine	70 — 95
Sulphone Blue R.....	60 — 95
Patent Blue A.....	2 85 — ...
Resorcein brown.....	80 — 90
Guinea green.....	1 00 — 2 20
Wool green S.....	70 — 1 70
Orange II.....	24 — 30
Orange GG crys.....	60 — ...
Acid Fuchsine	80 — 90
Azo eosine G.....	65 — 82
Crocein scarlet.....	1 15 — 1 30
Fast red A.....	50 — 65
Azo yellow.....	1 35 — 1 40
F. Light Yellow 2 G.	2 00 — ...
F. Light Yellow 3 G.	1 00 — 2 50
Naphthol, yellow....	1 35 — 1 40
Chrome Colors—	
Aliz. Black B.....	2 00 — ...
Diamond Black PV...	70 — ...
Chrome Blue Black..	40 — 50
Chrome Brown.....	60 — 1 25
Chrome Green.....	75 — 1 50
Chrome Yellow.....	45 — 1 10
Indigo—	
Synthetic 20% paste.	14 — 14½

Rayon and Wool

Where rayon silk is mixed with wool in the manufacture of men's wear, the beautiful lustre of the silk resulting from the straight smooth fibres is always a feature of the treatment of these fabrics with the

Wyandotte Textile Alkalies

When these special purpose alkalies are used there is an entire absence of that roughness which so often spoils the appearance and lustre of rayon silk. The fibres do not fuzz up, but so harmless and so gentle is the action of these alkalies that the natural sheen of rayon silk fibre is greatly enhanced.

Ask your supply man, or write our technical expert.

The J. B. FORD CO.
Sole Manufacturers
Wyandotte, Michigan.

NOTTINGHAM CURD
TALLOW CHIP No. 2 and No. 3 Chip SOAP
POTASH FIG SOAPS
for Woolens and Worsteds made with
Red Oil Olive Oil
Amber Oil
Olive Foots

TEXTILE SOAPS
MADE IN PAWTUCKET, R.I.
J.O. DRAPER CO.

Palm Oil
Curd SOAP
Olive SOAP
Chips or Bars
Soap Powder
For Mill Floors

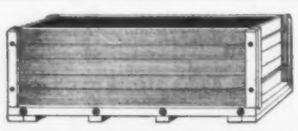
Established 1860. Incorporated 1905 LET US SUPPLY YOU

ESTABLISHED 1882
WALTER F. SYKES & COMPANY
IMPORTERS OF
FRENCH ANILINE COLORS AND DYEWOOD EXTRACTS
8 Lispenard Street, NEW YORK
PHILADELPHIA United States Agents BOSTON
ST. DENIS DYESTUFF & CHEMICAL CO.
(Poirrier)
Works—St. Denis (Seine,) France Works—Besseges, France

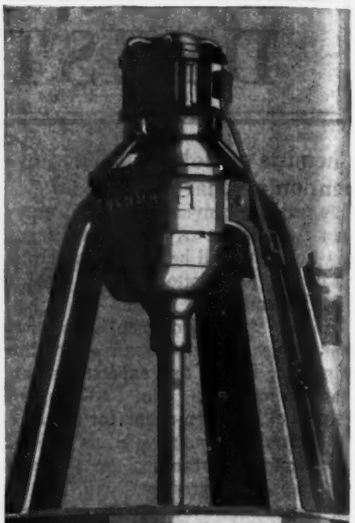
ANTHRACENE BLUE
W.R. and W.G. Pre-war Types
Extremely fast and level dyeing
Dyes well by Franklin Machine Process.
E. J. FEELEY, Inc., *Sole Agents*
Manufacturers - Agents - Importers
DYESTUFFS and CHEMICALS
128-130 Oliver St., Boston, Mass.

S. R. DAVID & COMPANY
INCORPORATED
Dyestuffs
252 Congress Street Boston, Mass.
Sole New England Agents for LACTAMINE and VIOLAMINE.
New England Agents for the FADE-OMETER,
Manufactured by Atlas Electric Devices Co.

ONYX OIL & CHEMICAL CO.
JERSEY CITY, N. J.
We cater to the wants of the Bleacher—Dyer—Throwster—Printer and Finisher



For the ordinary Dye Tub use Cedar.
For Silk Dye Tubs use Cypress.
For all Dyes use Woolford Tubs.
G. WOOLFORD WOOD TANK MANUFACTURING CO.
P. O. Paschall, Phila., Pa. Factory: Darby, Pa



TOLHURST
CENTRIFUGAL EXTRACTORS
A size and type for every textile requirement—from the 12" machine for wringing dyed samples to the large capacity 48, 60 and 72-inch machines.
Tolhurst Machine Works, Troy, N. Y.
Established 1852
New York Office, 30 Church St.
Western Representative: John S. Gage, 8 South Dearborn St., Chicago, Ill.
San Francisco Representative: B. M. Pilhashy, Merchants Exchange Bldg., San Francisco, Cal.
Southern Representative: Fred H. White, Independence Building, Charlotte, N. C.
Canadian Representative: W. J. Westaway Co., Westaway Bldg., Hamilton, Ont., 275 Craig West, Montreal, P. Q.

An Accurate and Sensitive Balance For Textile Use

Style No. 5020

Working parts and graduated beam enclosed in glass metal case.

For further particulars mention Style No. 5020.

Torsion Balances used by National, State and Municipal Governments. United States Appraisers Stores, Manufacturers and the trade. *Write for Textile Pamphlet.*

The Torsion Balance Company
Factory, Jersey City, N. J.
Office, 92 Reade Street, New York
Branches: Chicago and San Francisco

Dyestuffs and Chemicals—Continued

of fabrics are still in their infancy. After every war even wise men decide that we are never again to have true prosperity, yet they are always wrong. Men decide that we have reached the end, but we never have. Life continues to develop and grow more interesting in spite of the pessimist.

Bulletins Describe Newport Vat Dyes

Additional inserts issued by the Newport Chemical Works, Inc., Passaic, N. J., for their trade binder describe Anthrene Violet RN Paste and Anthrene Brown BB Paste. The former is said to possess many features which make it of great value for the dyeing of cotton and rayon. Its fastness is given as excellent, especially to light, chlorine, washing and water spotting. It is said to be distinguished by very good level dyeing properties and to be particularly useful for dyeing light and medium shades and for combinations with other types of Anthrene colors. The bulletin states that metals have practically no effect on its shade and consequently it can be dyed in all types of machines. It adds that this color is not particularly suitable for the dyeing of natural silk or for cotton or silk printing.

Anthrene Brown BB Paste is described as possessing excellent qualities for the dyeing of cotton in closed type machines and open tubs. It is stated to be of value as a base for drab and dark brown shades where fastness to chlorine is not essential. The other general fastness properties are given as very good. The color is said to be suitable for dyeing rayon, although the resultant shades are somewhat weaker than those obtained on cotton. It is not suitable for dyeing pure silk. Printed by the reduced caustic soda method, good printed patterns can be produced on cotton.

The bulletins contain dye samples and application instructions.

Hellwig Silk Dyeing Co. to Celebrate Golden Anniversary

The Hellwig Silk Dyeing Co., 9th and Buttonwood Sts., Philadelphia, with branch plant at Wissanoming, Philadelphia, weighting and dyeing silk yarns and piece goods, rayon and cotton yarns, etc., are celebrating their golden anniversary this year, having been in business for 50 years. An elaborate booklet is being prepared setting forth the details of their growth and development. It is interesting to note that this concern is shown to be one of the first to dye rayon commercially in the United States, this being in 1902 for the hat trade. It is also stated this organization was the first to introduce tin weighting of silk to full fashioned hosiery manufacturers.

Hightstown, N. J. The Hightstown Rug Co. is maintaining a full production schedule with day and night shifts, and expects to continue on this basis for an indefinite period.

Business News

Wayne Tank and Pump Co. Changes Name

Official announcement has been made of the change of name of the Wayne Tank and Pump Co., of Fort Wayne, Ind., to Wayne Co.

Permission for the change was granted for the reason that the old name is no longer descriptive of all the products made by the company, which in addition to its extensive gasoline pump and tank line also manufactures Wayne oil burners, water softeners and electric refrigerators for homes and Wayne industrial water softeners.

The change, which is effective as of Sept. 17, is in name only and in no way affects the business status or policies of the company which is now going into its 36th year.

The change in name writes another chapter in the development of the company which was organized in Fort Wayne in 1891 to manufacture gasoline and oil pumps and tanks. The addition of a water softener line a number of years ago brought further development and success and within recent months the formation of a home equipment division, in which is centralized the activity of the oil burner, domestic water softener and electric refrigerator activity, has made necessary even further expansion.

Made General Manager of Timken Service & Sales Co.

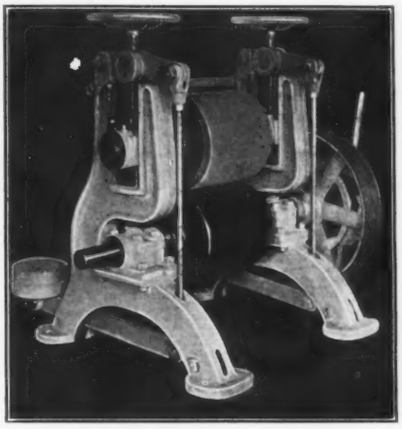
R. C. Brower has recently been appointed general manager of The Timken Roller Bearing Service and Sales Co., which maintains 25 direct factory branches and several hundred authorized distributors. Mr. Brower will make his headquarters in Canton, Ohio, at the main plant of The Timken Roller Bearing Co., but will devote a great deal of his time to maintaining contact in the field.

He is well known in the bearing industry, having been associated with it since 1913; and for the past four years with the Timken company, in both the automotive and industrial machinery sales divisions. Prior to that he was for many years eastern and central district manager of the Bearing Service Co., which was absorbed when the Timken Roller Bearing Service and Sales Co. was organized.

Appointed Industrial Training Advisor

L. S. Harding, for several years employment manager and director of training for the Worthington Pump & Machinery Corp., East Cambridge, Mass., has been appointed industrial training adviser for the Associated Industries of Massachusetts.

Besides assuming his new duties he will continue his activities with the Worthington Pump & Machinery Corp. as heretofore. This arrangement will result in extending Mr. Harding's services in developing apprentice training programs, planning foreman training projects and in the general problem of training in industry to a much larger field than has been the case previously.



SQUEEZER and SATURATOR

Extra Heavy Frames

Self Oiling Bearings

Rubber Covered Rolls

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Ball Bearing Dry Cans

Ball Bearing Reels

Washers—Mangles—Padders

FINISHING MACHINES, INC.

Builders of Textile Finishing Machinery

304 Pearl St., Providence, R. I.

All Around—

Reasons Why VICTROLYN

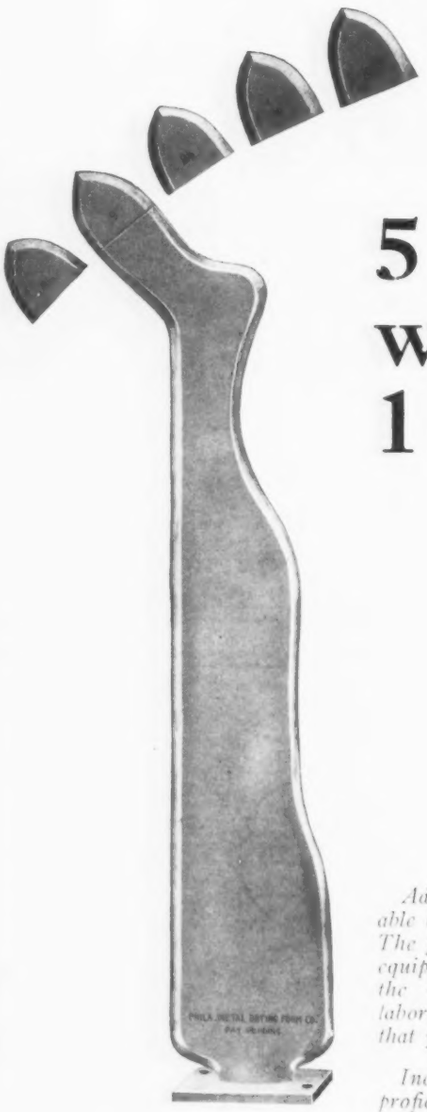
is used by the largest cotton mills in the country as a *Sizing Assistant* for Cotton Warps.

BOSSON AND LANE, *Sole Manufacturers*

ATLANTIC, MASS.

See also CONSOLIDATED TEXTILE CATALOG

A PROFIT MAKER For Any Hosiery Manufacturer!



5 Sizes with 1 Form

Adjustoe
METAL DRYING FORM

Adjustoe forms are imperishable and will outlast a life-time. The first cost is the only cost in equipping your drying room with the most efficient, economical, labor, time and expense saver that you can get.

Inexperienced workers become proficient and experienced boarders within a short time and there is real satisfaction prevailing from the boarding room to the private office.

THE fact that a big majority of new hosiery mills are equipping their drying rooms with Adjustoe forms tells its own story.

After studying cost figures these mills found that Adjustoe forms, by furnishing FIVE SIZES ON ONE FORM save labor, fuel and space and that they have another very valuable feature—the ADAPTABILITY which they furnish to the drying room. No waiting to make up an order when Adjustoe forms are used—change to the size you want in a few seconds—board the hosiery without lost time and get the order out.

Philadelphia Metal Drying Form Company

Main Office and Show Room: 123-5 N. 5th St., Phila., Pa.

Canadian Representative: W. J. Westaway Co., Ltd., Hamilton, Ont.

Haircloth Industry in U. S. Declines 25% in Two Years

WASHINGTON, D. C.—The Department of Commerce announces that, according to the data collected at the biennial census of manufactures, 1925, the establishments engaged primarily in the manufacture of haircloth reported products valued at $2,746,225, a decrease of 26.5% as compared with $2,511,986 in 1923, the last preceding census year. The haircloth included in this report is made from horsehair, sometimes interwoven with a cotton warp, and used primarily in the garment trade as a stiffening in shaping the shoulders of men's coats.

Of the 15 establishments reporting for 1923, 12 were located in Pennsylvania and 3 in other States.

In 1923 the industry was represented by 18 establishments, the decrease being accounted for by the loss of 3 establishments which had gone out of business prior to 1925.

The statistics for 1925 and 1923 are summarized in the following statement. The figures for 1925 are preliminary and subject to such correction as may be found necessary upon further examination of the returns:

	1925	1923
Number of establishments	15	18
Wage earners (av. number)*	355	499
Maximum month	Dec. 388	Mar. 546
Minimum month	July 326	Dec. 449
Per cent of maximum	84.0	82.2
Wages	$387,450	$464,401
Cost of materials (including fuel, electric power, and mill supplies)	$1,897,479	$2,511,986
Products, total value	$2,746,225	$3,733,969
Value added by manufacture†	$848,746	$1,221,983
Horsepower	1,058	1,333

* Not including salaried employees.
† Value of products less cost of materials.

Axminsters Rise at Start

(*Continued from page* 100)

cepted only at prices prevailing at time of shipment. Axminsters and velvets have been advanced; wiltons unchanged. A few prices on 9 x 12 sizes follow: Mohawk axminster, $40.80; Amsterdam axminster, $33.60; Lenox axminster, $24.00; Norwood velvet, $29.40; National tapestry, $16.80; Masland Argonne rugs, $28.80.

Stephen Sanford & Sons, Inc., advanced prices on nearly all lines. The list is subject to the mill's ability to ship by Jan. 1. A few typical quotations on 9 x 12 rugs follow: De Luxe, $49.50; Beauvais, $36; Fervak, $29.25; Clifton, $25; Westchester velvet, $37.50; Luzerne velvet, $27.50; Vermont, $20.75. The Beauvais rug mentioned above was opened for fall at $33.50 and advanced in mid-season to $35.

J. R. Shoaff & Co., agents for John Bromley & Sons, advanced axminsters 4 to 5% but on chenilles prices are unchanged. Typical 9 x 12 rugs follow: Livonia axminster, $30.30; Corsair, $26.40; Mirawar axminster, $31.80.

Firth Carpet Co. advanced all lines 3 to 5%. The list is subject to mill's ability to ship by Dec. 31. Among the various qualities are the following 9 x 12 basis: Richmond tapestry, $14.70; Empire tapestry, $18.90; Cornwall velvet, $20.10; Ravenswood velvet, $33.60; Auburndale axminster, $26.10; Seneca axminster, $35.70; Genesee axminster, $43.80.

Charles W. Paulson & Sons Co. issued a list 5% above the prices made on Sept. 1 and 8 to 10% above fall opening levels. The new list is effective until Dec. 1 at which time spring prices will be named.

The Topton Co., makers of Colonial braided rugs, reduced prices 10% for spring on six lines. Other lines remain unchanged from last season.

Crex Carpet Co. reduced prices on cotton and wool chenille rugs 8 to 10%. Prices on Millbrae seamless wilton are unchanged at $56.25 for 9 x 12.

J. & J. Dobson, Inc., made slight reductions in their jacquard wiltons. Their velvet rug quotations were unchanged.

A. & M. Karagheusian, Inc., advanced prices on axminsters from the Pennsylvania Axminster Mills 5%. Prices on wiltons and velvets were unchanged.

Hodges Carpet Co. advanced axminsters about 5% with fiber and wool lines about unchanged. Their Capital axminster is at $34.20 on 9 x 12 size, Crusader is at $29.00 and Keystone at $26.40.

Geo. K. Van Nostrand, Inc., made advances of 5% in lines of Columbia Carpet Mills as follows (on 9 x 12 size): Corona axminster, $30.50; Radnor axminster, $34.00; Euclid axminster, $26.50.

The Hightstown Rug Co. advanced Mercer and Hightstown axminsters about 4%.

The Beattie Mfg. Co. maintained unchanged prices on its velvet and axminster lines.

The Harvey Carpet Co. line is featured by a new Duco finish, all fiber, rug. The finish gives a durable high gloss, resistance to dampness and dirt. The rug is called "Artex" and the 9 x 12 size is priced at $17.90. The company priced Adelphia wool rugs at $29.00 for the 9 x 12 size.

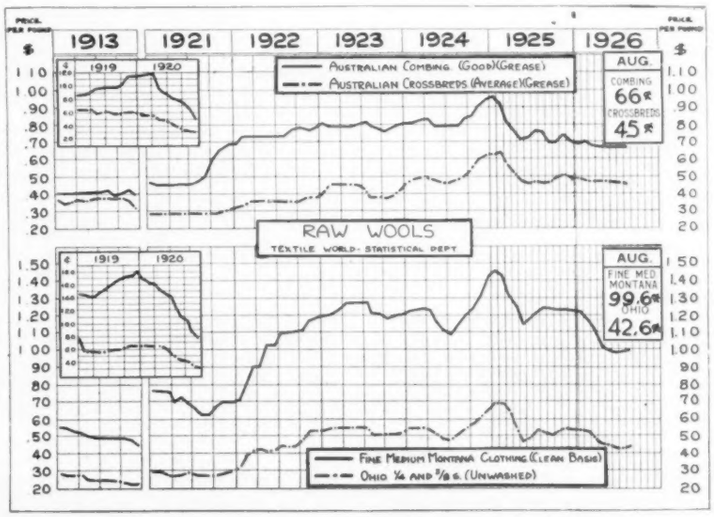
TEXTILE BALANCE OF TRADE

EXPORTS

	August, 1926	August, 1925	Eight Months Ended August, 1926	Eight Months Ended August 1925
Manufacturers of:				
Cotton	$8,379,106	$10,804,883	$78,260,638	$85,882,816
Wool	404,466	452,793	2,579,909	3,180,677
Silk	1,277,559	1,739,684	12,357,640	12,541,246
Rayon	565,334	590,185	5,156,022	6,404,091
Jute, flax, hemp, etc.	1,224,766	1,432,147	8,745,435	11,716,431
Total exports	$11,851,231	$15,019,692	$107,099,644	$119,725,261

IMPORTS

Manufacturers of:				
Cotton	$4,886,587	$5,286,815	$40,197,774	$47,779,262
Wool	5,706,590	5,036,892	38,050,686	36,596,782
Silk	3,504,329	3,573,536	24,710,056	22,987,959
Rayon	999,372	1,037,225	9,207,866	6,847,915
Jute, flax, hemp, etc.	11,371,270	12,320,935	108,251,010	103,581,450
Total imports	$26,468,148	$27,255,403	$220,417,392	$217,793,388
Excess of imports over exports	$14,616,917	$12,235,711	$113,317,748	$98,068,127



ALBANY, N. Y. The Rossland Rayon Corp. has been incorporated with capital consisting of 2,000 shares of $100 par value each and 8,000 shares of common stock, no par value. The incorporators are W. E. Rosenthal and M. L. Voight, Jr.

Business News

American Representative for English Woolen Machinery

The Textile Machinery & Supply Exchange, Bourse Bldg., Philadelphia, has been appointed sole U. S. representative for Walker & Smith, Ltd., Batley, England, for their line of woolen, rag, flock and hair machines which include rag pickers, rag shakers, automatic willows, "Fearnought" pickers, bedding pickers, flock making and flock curling machines and curtain shredding machines. Walker & Smith, Ltd., have an extensive line of "Fearnought" pickers and many are in use in U. S. at the present time. This concern also specializes in lags, or replacement clothing for cylinders of rag machines.

Baltimore Representative Placed by Link-Belt

Of interest to the friends in the Maryland district, of Gilbert H. Unruh, of Link-Belt Co., of Philadelphia, Chicago and Indianapolis, should be the news of Mr. Unruh's permanent location, for their greater convenience, as his company's representative in Baltimore.

Mr. Unruh is at present located at 618 Regester Ave., Stoneleigh, Baltimore County, Md., (Govans P. O.).

American Agent for J. T. Hardaker, Ltd.

Edward Jefferson, Inc., has been appointed American sales agent for J. T. Hardaker, Ltd., Bradford, England, who are the largest makers in the British Empire, of jacquards and jacquard card machines. Their line also includes machanes for all sizes and index cards. These are hand and power piano machines, lacing machines; repeating and reproducing machines.

Acquires Another Power Company in Carolinas

The Melrose Power & Mfg. Co., Tryon, N. C., has been purchased by the General Gas & Electric Corp. The company furnishes power to customers in Tryon, and Columbus, N. C., and Landrum, S. C. The main office of the company is located at Tryon. The power company is the third in the Carolinas to be acquired by the General Gas & Electric Co., the Blue Ridge Power Co., of Hendersonville, N. C., and the Enoree Power Co., of Van Patten Shoals, S. C., having been bought during 1926.

Governor Patronizes Home Industries

PORTLAND, MAINE.—Gov. Ralph O. Brewster lives up to his slogan "Buy Maine Products," by wearing All-Maine clothes. During his recent political campaign his blue serge suit was made in Camden, and the goods for his overcoat by the Worumbo Mfg. Co., of Lisbon Falls. His shoes were made at a Gardiner factory. The shirts he wore while touring the Pine Tree State came from Lewiston, while the buttons on them were manufactured by the Paragon Button Factory, of Waldoboro.